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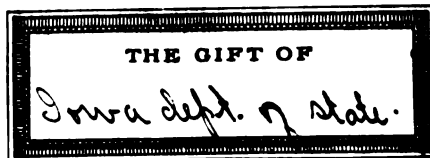
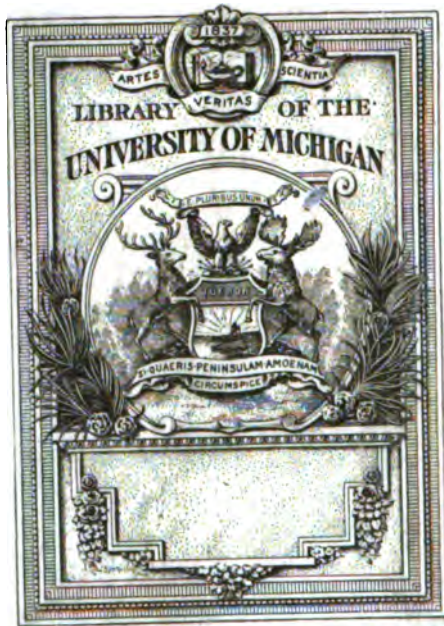
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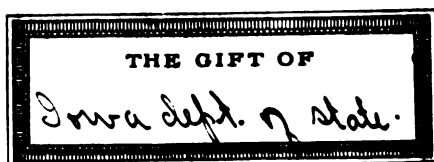
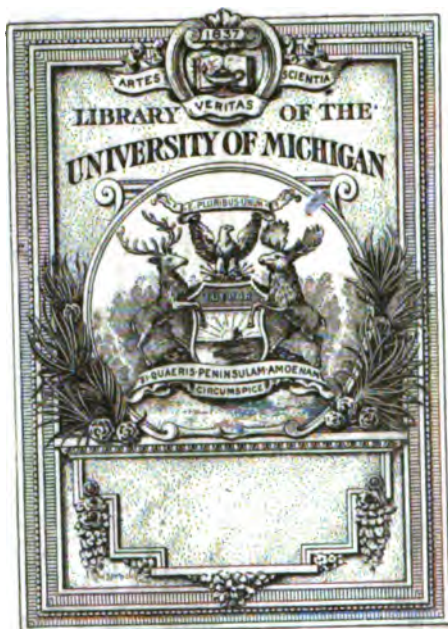




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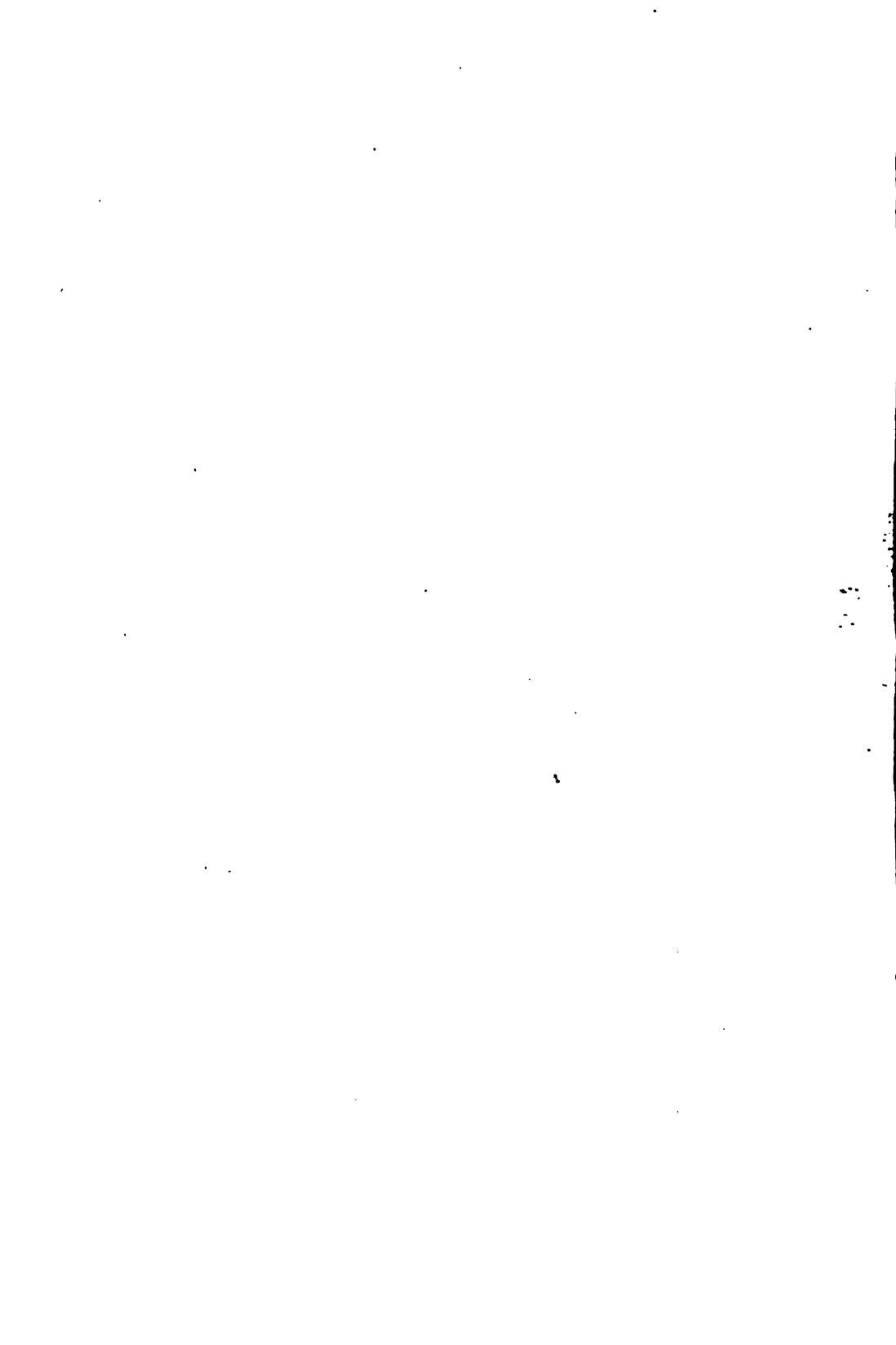
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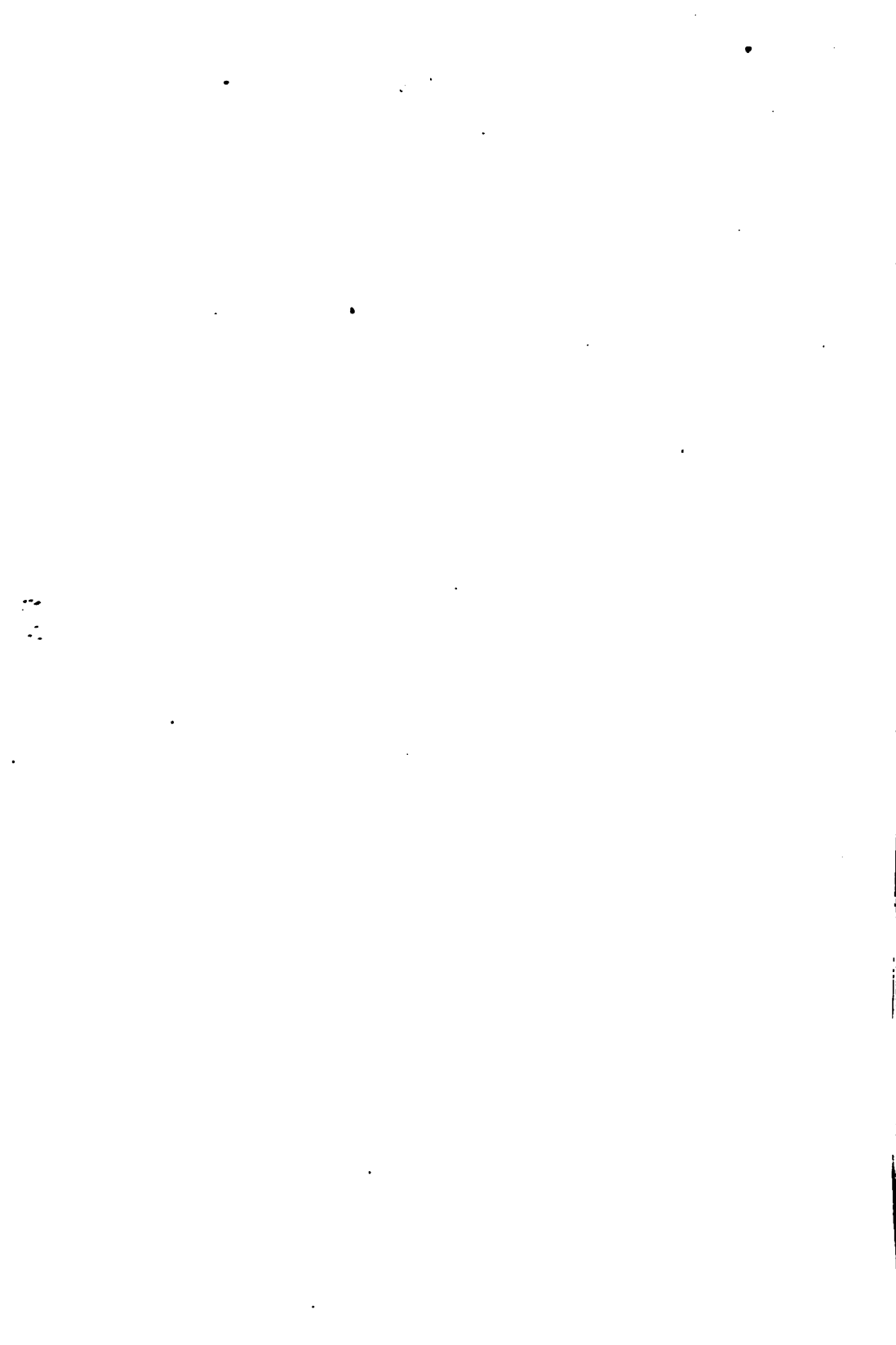


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LEGISLATIVE DOCUMENTS

SUBMITTED TO THE

Thirtieth General Assembly

OF THE

STATE OF IOWA

Which Convened at Des Moines, January 11, 1904.

ALBERT B. CUMMINS,	- - - - -	Governor
JOHN HERRIOTT,	-	Lieutenant Governor and President of the Senate
W. B. MARTIN,	- - - - -	Secretary of State
B. F. CARROLL,	- - - - -	Auditor of State
G. S. GILBERTSON,	- - - - -	Treasurer of State
JOHN F. RIGGS,	- -	Superintendent of Public Instruction
CHARLES W. MULLAN,	- - - - -	Attorney-General
GEORGE W. CLARKE,	- -	Speaker of the House of Representatives

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DES MOINES
B. MURPHY, STATE PRINTER
1904



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- No. 2. Inaugural.
- No. 3. Report of Auditor of State.
- No. 4. Report of Treasurer of State.
- No. 5. Report on Pardons.
- No. 6. Report of Criminal Convictions.
- No. 7. Report of Land Department.
- No. 8. Report of Custodian of Public Buildings.

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- Telephone and Telegraph Assessment for 1904.

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-

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ELEVENTH BIENNIAL REPORT
OF THE
STATE MINE INSPECTORS

TO THE
GOVERNOR OF THE STATE OF IOWA.

FOR THE
Two Years Ending June 30, 1903.

JOHN VERNER, District No. 1.
EDWARD SWEENEY, District No. 2.
JAMES W. MILLER, District No. 3.

PRINTED BY ORDER OF THE GENERAL ASSEMBLY.

DES MOINES:
BERNARD MURPHY, STATE PRINTER.
1903.

BOARD OF EXAMINERS
FOR MINE INSPECTORS, MINE FOREMEN, PIT BOSSES AND
HOISTING ENGINEERS.

H. BOOTH, *President*, Knoxville.

JOHN CALDWELL, *Secretary*, Seymour.

D. C. PHILLIPS, *Treasurer*, Hiteman.

EDWARD GRAY, Des Moines.

JOHN OWENS, Beacon.

REVIEW OF STATISTICS REGARDING MINING IN IOWA FOR THE TWO YEARS ENDING JUNE 30, 1903.

The coal mining industry of Iowa made greater advance during the last two years than during any like period of time since mining commenced in the state. The year ending June 30, 1903, was especially prosperous and established a new record in the annual amount of coal produced. For the first time the annual coal production in the state exceeded 6,000,000 tons.

The following tables give a summary of the number of mines in the three inspection districts, their coal output and number of men employed.

Number of mines in each district, their coal output, number of miners and other employees for the year ending June 30, 1902.

DISTRICT.	Number of mines	Tons of coal of all grades produced.	Number of miners employed.	Number of other employees.	Total number employed.
Number 1.....	119	2,818,535	4,161	1,776	5,937
Number 2.....	97	1,542,519	2,298	921	3,187
Number 3.....	1.8	1,658,152	2,882	996	3,578
Total	384	5,514,206	9,309	3,693	13,002

Number of mines in each district, their coal output, number of miners and other employees for the year ending June 30, 1903.

DISTRICT.	Number of mines	Tons of coal of all grades produced.	Number of miners employed.	Number of other employees.	Total number employed.
Number 1.....	124	2,888,675	4,855	2,004	6,859
Number 2.....	97	1,486,608	2,133	1,006	3,142
Number 3.....	92	1,866,456	2,681	1,010	3,691
Total	313	6,185,734	9,169	4,020	13,192

Number of mines in operation in each county, their coal output, number of miners and other employees for the year ending June 30, 1902.

Number.	COUNTY.	Number of mines	Tons of coal of all grades produced.	Number of miners employed.	Number of other employees.	Total number employed.
1	Monroe	16	1,288,978	1,779	812	2,591
2	Polk	30	981,610	1,264	467	1,731
3	Mahaska	28	784,885	962	438	1,400
4	Appanoose	68	783,978	1,762	715	2,467
5	Wapello	18	818,929	414	214	628
6	Marion	18	808,042	500	147	647
7	Boone	17	286,800	680	211	891
8	Lucas	4	285,468	239	160	449
9	Jasper	17	232,000	353	96	453
10	Keokuk	15	189,880	248	78	326
11	Webster	16	182,477	255	180	385
12	Wayne	8	45,960	188	68	186
13	Dallas	7	84,750	83	88	121
14	Scott	12	28,978	106	18	124
15	Warren	10	21,435	60	19	79
16	Taylor	7	20,556	83	17	100
17	Guthrie	12	17,250	121	89	160
18	Van Buren	7	16,718	42	15	57
19	Greene	4	16,192	46	16	62
20	Adams	12	11,765	100	13	112
21	Jefferson	4	4,785	22	6	28
22	Davis	4	3,850	18	4	23
23	Story	1	2,200	9	3	12
24	Page	4	1,850	25	7	32
Total		884	5,514,206	9,809	3,698	13,002

Number of mines in operation in each county, their coal output, number of miners and other employees for the year ending June 30, 1903.

Number.	COUNTY.	Number of mines	Tons of coal of all grades produced.	Number of miners employed.	Number of other employees.	Total number employed.
1	Monroe	19	1,600,148	1,758	1,081	2,839
2	Polk	25	990,578	1,127	488	1,615
3	Appanoose	70	892,692	1,889	610	2,499
4	Mahaska	28	678,826	929	463	1,392
5	Wapello	18	865,165	506	251	755
6	Jasper	18	323,812	508	182	700
7	Marion	18	298,875	400	175	575
8	Boone	12	288,055	480	165	645
9	Lucas	8	269,539	327	202	529
10	Webster	10	159,990	280	104	364
11	Keokuk	15	82,682	156	70	226
12	Wayne	8	74,642	185	65	250
13	Taylor	8	20,618	74	22	96
14	Warren	10	20,265	65	25	90
15	Dallas	6	19,990	75	85	110
16	Van Buren	7	18,740	52	20	72
17	Scott	7	18,280	80	13	92
18	Guthrie	18	16,645	75	15	90
19	Adams	12	16,462	85	16	101
20	Greene	6	12,711	56	9	65
21	Page	4	9,674	37	8	45
22	Jefferson	4	4,000	18	8	16
23	Davis	4	3,200	12	4	16
Total		818	6,185,784	9,169	4,023	13,192

ACCIDENTS.

During the year ending June 30, 1902, fifty-five fatal and seventy-nine serious accidents occurred in the mines of the state. The exceedingly large number of fatal accidents is a matter of much regret, and was due principally to a number of disastrous mine explosions which occurred during that year. Twenty-nine deaths were caused through blasting operations. A summary for the three districts follows:

DISTRICT NO. 1.

Number of fatal accidents, 11.

Cause of accidents:

Falls of slate or coal	6
Crushed by railroad car	1
Explosion	4

DISTRICT NO. 2.

Number of fatal accidents, 31.

Cause of accidents:

Falls of slate or coal	9
Struck by flying coal from shot	1
Caught between cage and shaft	1
Explosion	20

DISTRICT NO. 3.

Number of fatal accidents, 13.

Cause of accidents:

Fall of slate or coal	7
Struck by coal flying from shot	4
Falling down shaft	1
Caught under pit car	1
Total	55

SERIOUS ACCIDENTS.

District No. 1	25
District No. 2	35
District No. 3	19
Total	79

During the year ending June 30, 1903, twenty-one fatal and fifty-eight serious accidents were reported. No lives were lost through explosions and the record for that year is very gratifying when compared with the record of

previous years. The shot examination law was certainly a large factor in preventing loss of life, and its enactment has proved a blessing to the operators and miners of Iowa.

DISTRICT NO. 1.

Number of fatal accidents, 11.

Cause of accidents:

Struck by timber.....	1
Fall of slate or coal.....	8
Premature explosion of dynamite	1
Caught under pit car	1

DISTRICT NO. 2.

Number of fatal accidents, 5.

Cause of accidents:

Fall of slate.....	3
Falling down shaft.....	1
Caught under pit car	1

DISTRICT NO. 3.

Number of fatal accidents, 5.

Cause of accidents:

Fall of slate.....	3
Falling down shaft.....	1
Struck by coal flying from shot	1
Total	21

SERIOUS ACCIDENTS.

District No. 1	27
District No. 2	18
District No. 3	13
Total	58

Fatal and serious accidents in the mines of the state during the year ending June 30, 1902, with relation to coal produced and number of employees.

DISTRICTS.	NUMBER OF ACCIDENTS.		NUMBER OF TONS OF COAL PRODUCED.	TONS OF COAL PRODUCED FOR EACH ACCIDENT.		NUMBER OF EMPLOYEES.	NUMBER OF EMPLOYEES FOR EACH ACCIDENT.	
	Fatal.	Serious.		Fatal.	Serious.		Fatal.	Serious.
District No. 1.	11	25	2,318,535	210,776	92,741	5,987	533	237
District No. 2.	81	85	1,542,519	49,758	44,072	3,187	108	92
District No. 3.	18	19	1,653,152	127,165	85,005	8,878	221	204
Total...	55	79	5,514,206	100,258	69,802	18,002	286	164

Fatal and serious accidents in the mines of the state during the year ending June 30, 1903, with relation to coal produced and number of employees.

DISTRICTS.	NUMBER OF ACCIDENTS.		NUMBER OF TONS OF COAL PRODUCED.	TONS OF COAL PRODUCED FOR EACH ACCIDENT.		NUMBER OF EMPLOYEES.	NUMBER OF EMPLOYEES FOR EACH ACCIDENT.	
	Fatal.	Serious.		Fatal.	Serious.		Fatal.	Serious.
District No. 1.	11	27	2,888,075	262,152	106,803	6,859	578	235
District No. 2.	5	18	1,466,608	296,820	81,478	3,142	628	178
District No. 3.	5	13	1,885,456	807,091	125,804	8,691	733	284
Total.....	21	58	6,185,784	294,559	106,650	13,192	628	227

BIENNIAL REPORT OF THE
FIRST DISTRICT

EMBRACING THE COUNTIES OF

MONROE,
LUCAS,
TAYLOR,
ADAMS,

APPANOOSE,
WAYNE,
PAGE.

JOHN VERNER, INSPECTOR.

LETTER OF TRANSMITTAL.

HON. ALBERT B. CUMMINS, Governor of Iowa.

Sir,—I have the honor to submit to you herewith the report of the First Inspection District, covering the biennial period ending June 30, 1903.

Very respectfully,

JOHN VERNER,

Inspector First District.

REPORT OF FIRST DISTRICT.

My work as inspector of the first district, comprising the counties of Monroe, Appanoose, Lucas, Wayne, Taylor, Page and Adams, commenced April 1, 1902. As I was fairly well acquainted with the conditions in nearly all the mines in the territory assigned me I had few of the difficulties to overcome that come to a mine inspector in commencing in a field he knows little about. From April 1, 1902, to June 30, 1903, 283 inspections were made and twenty-three scales were tested, and I am pleased to be able to report that appreciable progress was made in that time in improving the mines and their equipments. The improvements made in and about the mines of the district, of which more will be said later on, have been extensive and valuable, and it is a pleasing feature that the operators as well as the miners shared in the benefits that have come from them.

The mining industry of the district has not suffered or been disturbed by strikes or lockouts. The relations between operators and miners have been friendly, and the yearly agreement between them as to wages and labor conditions practically removed the elements likely to bring discord.

The coal production of the district was very much larger during the last two years than during any like period of time in the past. Last year especially showed substantial gains. The cessation of work in the anthracite mines during the summer of 1902 had undoubtedly considerable influence in stimulating the coal trade in this territory. It seems unlikely that all the trade that came to the Iowa coal operator on that account can be retained in the future, but it appears reasonably certain that the advantage gained will prove a fairly permanent one, and that a considerable number of those who purchased Iowa coal last year through force of circumstances have found out that it is a very fair fuel after all, and will remain willing customers in the future.

The prospect for the future development of the coal wealth of the district appears to be good. A number of new mines have been opened recently, others are being developed now and the opening of others will commence soon. The prospecting for new coalfields is carried on with greater activity than ever before.

The coal mined in the district during the year ending June 30, 1903, amounted to 2,883,675 tons, exceeding that of the preceding year by 565,140 tons. This output came from 124 mines giving direct employment to 6,359 persons. Every county in the district showed a gain in coal production; in some counties the gain was small, in others quite marked. The gain was mainly due to the more steady operation of the mines last year and the correspondingly increased production by the individual miner. In Monroe county the annual output of coal per miner was raised from 713 tons (mine

run), for the year ending June 30, 1902, to 910 tons for last year. In Appanoose county the output of the individual miner reached 472 tons (lump) last year as against 419 tons in the year preceding. The Lucas county mines showed 824 tons of coal (mine run) per miner last year. The year before the average was 814 tons. In Wayne county the output increased from 345 tons (lump), year before last, to 403 tons last year.

The following tables give the number of mines in the counties comprising the district, their coal output and the number of persons employed in the coal industry:

Number of mines in operation in each county, their coal output, number of miners and other employees in District No. 1 for the year ending June 30, 1902.

COUNTY.	Number of miners.	Tons of coal of all grades produced.	Number of miners employed.	Number of other employees.	Total number employed.
Monroe	16	1,288,973	1,779	812	2,591
Appanoose	68	783,973	1,553	715	2,467
Lucas	4	235,468	289	160	449
Wayne	8	45,950	133	53	183
Taylor	7	20,558	83	17	100
Page	4	1,850	25	7	32
Adams	12	11,765	100	12	112
Total	119	2,818,535	4,161	1,776	5,937

Number of mines in operation in each county, their coal output, number of miners and other employees in District No. 1 for the year ending June 30, 1903.

COUNTY.	Number of miners.	Tons of coal of all grades produced.	Number of miners employed.	Number of other employees.	Total number employed.
Monroe	19	1,600,148	1,758	1,081	2,839
Appanoose	70	882,692	1,889	610	2,499
Lucas	3	299,539	327	202	529
Wayne	8	74,542	186	75	250
Taylor	8	20,616	74	22	96
Page	4	9,674	37	8	45
Adams	12	16,462	85	16	101
Total	124	2,898,675	4,855	2,004	6,859

Increase or decrease in the number of mines, etc., for the year ending June 30, 1903, in comparison with the year ending June 30, 1902.

COUNTY.	NUMBER OF MINES.		TONS OF COAL OF ALL GRADES PRODUCED.		NUMBER OF MINERS.		NUMBER OF OTHER EMPLOYES.	
	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.
Monroe	8	.....	331,175	.....	.....	21	269	.....
Appanoose	2	.....	153,719	.....	137	.....	.....	105
Lucas .....	.....	1	34,071	.....	35	.....	42	.....
Wayne .....	.....	.....	23,532	.....	52	.....	12	.....
Taylor	1	.....	62	.....	.....	9	5	.....
Page .....	.....	.....	7,324	.....	12	.....	1	.....
Adams .....	.....	.....	4,097	.....	.....	15	4	.....
Total	5	.....	535,140	.....	194	.....	223	.....

Coal production in tons of the counties now comprising the first district, for the last six years.

COUNTY.	1898.	1899.	1900.	1901.	1902.	1903.	TOTAL.
Monroe	590,300	662,500	641,928	937,750	1,238,973	1,600,148	5,701,590
Appanoose	421,100	444,282	645,232	650,400	799,978	992,692	3,757,729
Lucas	10,800	12,800	133,196	249,303	235,468	299,589	911,706
Wayne	41,200	43,300	43,300	50,200	45,950	74,542	308,992
Taylor	11,800	14,100	22,652	20,400	20,536	20,618	110,156
Page	5,050	6,065	.....	1,700	1,850	9,674	24,359
Adams	21,300	22,800	16,370	18,351	11,765	16,462	107,078
Total	1,101,550	1,120,867	1,508,258	1,928,684	2,318,585	2,833,675	10,951,510

MINES OPENED AND MINES ABANDONED IN THE LAST TWO YEARS.

MONROE COUNTY.

MINES OPENED.	MINES ABANDONED
No. 4. Wapello Coal Co. No. 1. Excelsior Coal Co. No. 6. Phillips Fuel Co. No. 2. Miller Creek Coal Co. No. 3. Miller Creek Coal Co.	No. 1. Wapello Coal Co. Frederic, Smoky Hollow Coal Co. No. 1. Deep Vein Coal Co.

APPANOOSE COUNTY.

Oriental Coal Co. Exline Coal Co. No. 7. Peerless Coal Co. No. 30. Manufacturers Coal and Coke Co.	Economy Coal Co. No. 7. Centerville Block Coal Co.
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LUCAS COUNTY.

Inland Fuel Co.	Lucas & Cleveland Coal Co.
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WAYNE COUNTY.

E. A. Sipes. No. 2. L. Frye.	
---------------------------------	--

TAYLOR COUNTY.

No. 2. Campbell Coal Co.	
--------------------------	--

PAGE COUNTY.

Johnston & Company. Winger Bros. I. Vanarsdal.	
--	--

CONDITIONS OF THE MINES WITH REGARD TO THEIR SAFETY.

It seems unnecessary to give the conditions existing at each mine in detail, as that already has been done in the monthly reports made by me to the Governor. In a general way it can be stated, however, that a commendable spirit has been shown on the part of most operators to get their mines in such condition, that mining may be carried on in them as safely as possible. The men selected by them to handle machinery and look after the safety of the mine workers have proved themselves generally competent and reliable. The traveling roads were fairly well looked after, and the fact that not a miner, while passing through them in going to or returning from his working place, was injured during the last two years, showed that such was the case. In a number of mines, having mechanical haulage, separate traveling ways have been provided, to be used during working hours while the haulage system was in motion. The roads leading to the escapes have been kept reasonably safe and unobstructed. The escapes, however, and especially the shafts, were not found always in available condition, due to the accumulation of ice in them during the winter season. While it may be difficult to prevent ice forming in some of these shafts, they could have been kept ready for use any time, even in the coldest weather, if only timely attention had been given to the matter and the necessary work had been done to keep them open.

The safety devices provided for by the mining law, have been found in most cases to be in satisfactory condition, and no accident of a serious nature occurred in the last two years owing to the absence or defectiveness of these devices. This does not mean, however, that they were always in good working order at every mine. In the few cases noticed, where any of the devices were found out of order, the neglect to keep them in repair appeared to be due to the fact that no one in particular was charged with looking after them. In above instances, and whenever occasion seemed to require it, I admonished the hoisting engineers in charge, that I should hold them responsible for the safe and reliable condition of the whole hoisting apparatus from the engine to the cage and its appurtenances, and that I considered it their business to know that every single part of the apparatus was in perfect working order, so men could be lowered and hoisted with the utmost safety. The law to license hoisting engineers was evidently enacted to provide better protection to life. The state of Iowa, through the board of examiners, declared the men receiving such license to be competent to bring about this result and as the state has assumed a certain responsibility in this matter, it and the people directly interested have a right to expect good service to that end. Such service can be rendered only by the engineer having full control of the whole hoisting apparatus and by his being held responsible for the reliable working of all its parts.

MINE VENTILATION.

Of twenty-seven mines with an output of more than 25,000 tons of coal each last year, twenty-six were ventilated by fans and one by furnace. Of the forty-six mines with a yearly output of from 5,000 to 25,000 tons each, eighteen were ventilated by fans, twenty-six by furnaces and two by steam jets, and of the mines with an output of less than 5,000 tons, one had fan ventilation, many had small furnaces, while some of the small country mines, working only during the winter, depended on natural ventilation. I am pleased to be able to state that, in a general way, appreciable progress has been made during the last year to improve the ventilation of the mines of this district. Air courses have been cleaned and enlarged, at some mines better ventilating machinery has been provided and at others additional air shafts have been sunk. In this connection it can be said that very creditable work has been done by some of the operators. Since July 1, 1902, four air shafts have been sunk to improve the ventilation of mines that had been in operation for some years, four others of this class were commenced and will be completed at an early date, while eight air shafts were sunk for mines recently opened, making a total of sixteen of these shafts provided in the last year.

Improvements in mining conditions are necessarily of slow growth, and their need is often not sufficiently appreciated, but in the matter of mine ventilation I believe it can be truthfully said that the operators of this district realize more and more that, apart from the human view of the case, efficient ventilation of their mines is a very desirable thing to have, because it really is a good investment bringing fair returns on the money paid out to secure it. The work now going on or contemplated in this direction in the district, indicates that a material improvement in mine ventilation may be expected in the near future.

SCALES.

Of the twenty-three scales tested since April 1, 1902, some were not found in satisfactory condition, but they were either adjusted to weigh accurately or were replaced by new scales. Several track scales were taken up this summer, while the coal trade was dull and the work could be done with the least loss to all concerned, sent to the factory and thoroughly overhauled, adjusted and replaced by competent men, so it appears that, for the time being at least, the coal weighing apparatus of the district is in very fair shape.

SHOT EXAMINERS.

The shot examination law, enacted by the Twenty-ninth General Assembly, became effective April 17, 1902. By May 1st provisions had been made at all the mines in the district affected by the law, so the shots prepared in them could be examined by competent persons. In order to help these men to do their work as effectively and with as much uniformity as possible, the following circular was prepared and mailed to them.

To the Shot Examiners of the First Inspection District of Iowa:

"In all mines, where coal is blasted from the solid, competent persons shall be employed to examine all shots before they are charged. Said examiners to have the power to prohibit the charging and firing of any shot which, in their judgment, is unsafe. Before entering upon the discharge of their duties, said examiners shall give proof of their competency to the state mine inspector of the district in which the mine, where they are employed, is located, and said inspector shall certify to the operator of each mine the persons who have given proof of their competency to act in the capacity of shot examiners. The state mine inspector to have the power to refuse to give permission to any person to act as shot examiner who, in his judgment, is not sufficiently competent; or he may revoke the permission granted, should it appear that a shot examiner is negligent or careless in the performance of his work."

This is the law relating to shot examination passed by the Twenty-ninth General Assembly of Iowa. Under the present mode of mining the coal in this state by the use of powder, it would be difficult to construct a law on shot examination which promises better results and a greater measure of safety than the above. It centers the responsibility on the few; it gives the inspector the right of selection and removal; it gives the shot examiner freedom of action, which perhaps would be lacking sometimes, if the unrestricted right of selecting shot examiners remained with the operator, and I am sincere in the belief that, if you do your duty fairly and fearlessly, there is reasonable assurance that the danger from explosions will not only be successfully overcome, but a greater efficiency of workmanship will result.

Reasonable speed in examination of shots is desirable, but thorough and careful work is essential. You should commence your work as early in the day as circumstances will permit. Gain and hold the confidence and respect of the miners by your fairness, impartiality and firmness. If you have occasion to reject a shot as prepared, which you might accept if some additional work were done on it or some alteration made, tell the miner what should be done to make the shot acceptable, and if he is willing to follow your advice, reward his willingness by visiting his place again before firing time and pass the shot, if it has been prepared as you directed. If in the above case the miner is unwilling to do as you request, do not stop to argue the case, but reject the shot and pass on to the next place.

In examining a shot take into consideration the depth and direction of the hole, the size and shape of the shot, the condition of the coal, roof and bottom, the location of the hole with regard to remaining parts of previously fired holes, cracks and fissures made by them, the location of the hole with regard to adjoining working places and the amount of powder to be used. By making inquiry as to the amount of powder to be used, it is not intended that you should determine the size of the charge; that part should be left largely with the miner, but you should be informed about it, so you can determine whether the charge is safe or not.

A shot may be termed safe when there is reasonable assurance that the force and heat due to the explosion of the powder will be used up almost completely in the removal of the coal or other material; a shot may be considered dangerous when it appears that in all probability the major portion of the force and heat developed by the powder's explosion will not be so used up, but be projected into the dust-laden mine air in the immediate vicinity of such shot, with results that may prove disastrous.

To be more definite, however, your attention is called to the following shots; some of them should be rejected outright, and the others should share the same fate if, in your judgment, danger is likely to come from them:

1. A hole which has blown the tamping must not be recharged and fired again. The dangerous character of such shots was recognized by the recent conference of the miners and operators in Des Moines, and in their yearly agreement they condemned them as unsafe.

2. A hole drilled near the remaining part of an old hole or cracks and fissures made by previously fired shots, if there is danger of the force and flame of the charge finding ready vent through such part of an old hole, crack or fissure, must not be fired.

3. A hole located along the rib should receive your careful attention. If it is drilled in such manner that there is probability of the force of the charge being projected into the adjacent working place, it is a dangerous shot and must be rejected.

4. A shot measuring more across the point than the height of the material to be removed, especially if the hole is gripping, is in most cases not only unprofitable to the miner, but more or less dangerous and should not be accepted.

5. Holes drilled parallel with the cut in narrow work should not be drilled ahead of the back of the cut. It is true that under favorable conditions such shots have been fired without bad results, but in order to accord all as uniform treatment as possible and to relieve you of unnecessary responsibility you should invariably reject them.

6. A shot following another and depending on the success of the first is an indication of lack of skill on the part of the miner in working his place properly, and I advise you to reject such shots. In mines where the practice prevails of drilling sump holes to relieve the heavier top shots, such top shots depending on properly located sump shots may be accepted, provided that the shots are not fired together and that the top shot cannot be fired should the sump shot fail to do its work.

7. Holes drilled parallel with the plane of stratification, especially if the coal contains smooth and frequent partings, are not safe holes on account of the possibility of an easy release of the charge by having only to remove the thin layer of coal between such partings.

8. An improperly or insufficiently tamped hole is dangerous, and you will insist that the miner use the kind of tamping prescribed in the Des Moines agreement and that he tamp the hole firmly from the powder to its mouth. The matter of properly tamping the holes is an important factor in promoting safety at firing time, and I urge you to see to it that the provisions of the agreement with regard to tamping are strictly carried out.

9. Short holes, holes over or behind a bowlder, breaking down shots in narrow work, slim shots, shots with slight heels and thickening rapidly towards the point and shots with obstructions in either top or bottom, should receive your careful attention, and you should be fully convinced of their safe character before you accept them.

The number of shots that may be fired in one working place must be determined by local conditions. It is advisable, however, that not more than two coal shots be prepared in entries or in rooms not fully opened. If

more than one shot be fired in a place, provisions must be made so the shots will not go off at the same time.

Pure air is essential to the formation of a "dust" explosion. You will therefore be particularly careful in your work in that part of the mine where the ventilation is especially efficient. Experience has brought out the fact that on account of superior ventilation and for other reasons dry dip workings provide very favorable conditions for the starting of a "dust" explosion, and for that reason you should exercise great care in the examination of shots in such workings.

Remember that lack of room for the rapid expansion and dissipation of heat produced by the firing of a risky shot carries with it an element of danger, which must not be underestimated. You can do much to eliminate this element of danger by careful work on your part.

Aside from your supervision over placing and preparing of shots, it is your duty to see that accumulations of dust in the working parts of the mine are prevented as far as practicable, and that the working entries and all other places, which in your judgment need it, are sprinkled and kept in damp condition.

You will keep a brief record of all shots rejected by you, naming entry, number of room and cause of rejection. Should there be a windy shot in the territory under your charge, make a personal investigation as to its cause.

As far as your qualifications to do the work acceptably could be established by examination and inquiry, you have given satisfactory proof that you are well qualified. Knowing how to do the work right and doing it right are not, however, synonymous terms. I hope in your case your actions will show that there was no mistake made in choosing you as shot examiners, and that you will fill the responsible position with credit to yourselves and with benefit to the miner and operator. If I find that a shot examiner is careless or negligent in the performance of his work, I shall withdraw his name from the certified list, but I trust there will be no occasion to make this necessary.

In conclusion, I will say that if you will act in accordance with the above suggestions and in addition carefully read the report of the commission on explosions in Iowa, a copy of which will be sent you, if you not already have one, and apply the knowledge gained from its perusal in a practical way your work will prove an almost sure preventive for future explosions in the mines of the first district.

JOHN VERNER,
Inspector District No. 1.

The Iowa shot examination law has been in force for fifteen months, it has passed the experimental stage and the benefits gained by its enactment have been fully established. This desirable result was largely due to the fact that the operators and miners of the state have labored together to make the law a success. The miners realized that adequate protection to life and property could not be provided by the operators alone and that their own assistance was needed to help bring it about. They have given that

assistance and have been doing their share in securing an increased measure of safety in mining, and the gratifying success attained so far is a pleasing indication that co-operation in this direction has come to stay.

ACCIDENTS.

During the year ending June 30, 1902, eleven fatal accidents occurred in and about the mines in this district, and twenty-five serious accidents were reported to this office. Of the eleven fatal accidents, ten occurred in the mines and one outside; of the former, four were due to explosions and six were caused by falls of rock or coal. The majority of the serious accidents occurred at the working face and were due to falls of rock or coal.

In the year ending June 30, 1903, eleven fatal and twenty-six serious accidents were recorded. Three of the fatal accidents occurred on the entries, five miners lost their lives at the working face through falls of slate or coal, and one was killed by a premature explosion of dynamite. The last is the only instance of loss of life in this district through the use of explosives since the passage of the shot examination law in April, 1902. It was one of the few accidents that can be termed unavoidable. The man killed was one of the most careful miners in the employ of the Wapello Coal company. The dynamite evidently exploded in his hands while he was preparing it for charging a hole, but the cause of its exploding will never be known. In none of all the above accidents could any proof be found indicating that they had been caused through lack of care or non-compliance with the provisions of the mining law on the part of the management of the mines where they occurred. The following tables give the accidents in detail and their relation to the output of coal and number of men employed:

Fatal accidents in District No. 1, July 1, 1901-June 30, 1902.

DATE.	NAME OF DECEASED.	OCCUPATION.	CAUSE OF DEATH.	EMPLOYED BY—	COUNTY.
July 19, 1901	James Hall	Miner	Fall of coal	Hooking Coal Co.	Monroe.
July 23, 1901	John Young	Miner	Fall of slate	Hooking Coal Co.	Monroe.
September 24, 1901	R. Collingwood	Driver	Fall of coal and rock	Big Hill Coal Co.	Lucas.
October 22, 1901	Geo. Robinson	Shotfirer	Explosion	Whitebreast Fuel Co.	Monroe.
December 18, 1901	John E. Grimes	Miner	Fall of slate	Star Coal Co.	Monroe.
December 31, 1901	Albert Olds	Pusher	Fall of rock	W. S. Ell-nwood	Adams.
January 7, 1902	A. B. McDowell	Shotfirer	Explosion	Whitebreast Fuel Co.	Lucas.
January 29, 1902	Jas. Bender	Timberman	Fall of slate	Whitebreast Fuel Co.	Monroe.
February 7, 1902	Alf. Rockhold	Night watch	Crunched by railroad car	Whitebreast Fuel Co.	Lucas.
February 13, 1902	Kas. Rogers	Shotfirer	Explosion	Hooking Coal Co.	Monroe.
February 18, 1902	W. C. Palmer	Shotfirer	Explosion	Hooking Coal Co.	Monroe.

Table of fatal accidents in District No. 1, July 1, 1902-June 30, 1903.

DATE.	NAME OF DECEASED.	OCCUPATION.	CAUSE OF DEATH.	EMPLOYED BY—	COUNTY.
July 19, 1902	John H. Evans	Timberman	Struck by timber	Inland Fuel Co.	Lucas.
August 16, 1902	S. Strather	Timberman	Fall of slate	Whitebreast Fuel Co.	Lucas.
September 11, 1902	Geo. E. Howe	Miner	Fall of coal	Peacock Coal Co.	Appanoose.
October 27, 1902	A. Bowdre	Miner	Fall of slate	Smoky Hollow Coal Co.	Appanoose.
December 5, 1902	Geo. Wims	Miner	Fall of slate	Consolidation Coal Co.	Monroe.
December 19, 1902	John Rowley	Driver	Caught under car	Hooking Coal Co.	Monroe.
January 8, 1903	John Peterson	Miner	Fall of slate	Wapello Coal Co.	Monroe.
January 10, 1903	Thos. Newton	Miner	Fall of slate	Phillips Fuel Co.	Monroe.
February 13, 1903	Jas. Wild	Miner	Premature explosion of dynamite	Wapello Coal Co.	Monroe.
March 20, 1903	C. Conner	Miner	Fall of coal	Exline Coal Co.	Appanoose.
March 24, 1903	A. J. Riley	Miner	Fall of slate	Hooking Coal Co.	Monroe.

Serious accidents in District No. 1, for the year ending June 30, 1902.

DATE OF ACCIDENT.	NAME OF INJURED.	OCCUPATION.	CHARACTER OF INJURY.	CAUSE OF INJURY.	EMPLOYED BY—	COUNTY.
July 12, 1901	John Neighbour.	Laborer	Leg broken.	Fall of slate.	Wapello Coal Co.	Monroe.
July 22, 1901	Robert Young.	Miner	Rib broken.	Fall of slate.	Hocking Coal Co.	Monroe.
July 27, 1901	John Cadell.	Miner.	Collar bone broken hip dislocated.			
August 2, 1901	Wm. Peckarl.	Miner.	Ankle crushed.	Fall of slate.	Consolidation Coal Co.	Monroe.
August 10, 1901	Wm. Mitchell.	Driver	Leg broken.	Fall of coal.	Economy Coal Co.	Appanoose
August 22, 1901	K. Benson.	Miner.	Jaw broken.	Fell under car.	Wapello Coal Co.	Monroe.
August 23, 1901	J. B. Woodriddle.	Miner.	Ribs broken.	Fall of slate.	Smoky Hollow Coal Co.	Monroe.
October 23, 1901	T. Davidson.	Driver	Ribs broken.	Fall of slate.	Whitebreast Fuel Co.	Monroe.
October 24, 1901	O. Fisher.	Miner.	Leg broken.	Struck by pit car.	Whitebreast Fuel Co.	Lucas.
November 24, 1901	T. Moon.	Miner.	Collar bone broken.	Fall of coal.	Economy Coal Co.	Appanoose
January 8, 1902	Ed Swanson.	Miner.	Leg broken.	Fall of coal.	Rock Valley Coal Co.	Appanoose
January 15, 1902	C. Townsend.	Miner.	Leg broken.	Fall of coal.	Consolidation Coal Co.	Monroe.
January 24, 1902	Sam Thomas.	Driver	Leg broken.	Fell under car.	Illinois and Ia. Coal Co.	Appanoose
January 25, 1902	John Raa.	Driver	Arm broken.	Fell under car.	Wapello Coal Co.	Monroe.
February 2, 1902	J. Poedelick.	Miner.	Leg broken.	Fall of rock.	Mendota C. and M. Co.	Appanoose
February 7, 1902	P. E. Smith.	Driver	Shoulder broken.	Coal falling down shaft.	Economy Coal Co.	Monroe.
February 27, 1902	G. V. Peterson.	Driver	Back injured.	Fall of slate.	Consolidation Coal Co.	Appanoose
March 21, 1902	John Cobley.	Laborer	Leg broken.	Caught between cars.	Hocking Coal Co.	Monroe.
March 21, 1902	W. Pete.	Miner.	Leg broken.	Fall of coal.	Columbia Coal Co.	Appanoose
April 10, 1902	G. W. Moss.	Driver	Arm broken.	Fall of slate.	Smoky Hollow Coal Co.	Monroe.
April 12, 1902	E. Armstrong.	Miner.	Back injured.	Fall of slate.	Smoky Hollow Coal Co.	Monroe.
April 5, 1902	H. Carwin.	Trapper	Arm broken.	Fell under car.	Wapello Coal Co.	Monroe.
April 16, 1902	A. Welch.	Driver	Leg broken.	Fell under car.	Wapello Coal Co.	Monroe.
May 20, 1902	John Hatley.	Driver	Arm broken.	Kicked by mule.	Smoky Hollow Coal Co.	Monroe.
June 14, 1902	G. W. Exline.	Miner.	Small bones in foot broken.	Fall of coal.	Exline Coal company.	Appanoose

Serious accidents in District No. 1, for the year ending June 30, 1903.

DATE OF ACCIDENT.	NAME OF INJURED.	OCCUPATION.	CHARACTER OF INJURY.	CAUSE OF INJURY.	EMPLOYED BY	COUNTY.
July 18, 1902	M. Jones	Miner	Leg broken.	Fall of slate.	Hooking Coal Co.	Monroe.
August 7, 1902	R. Lennie	Miner	Ribs fractured.	Fall of slate.	Smoky Hollow C. Co.	Monroe.
September 11, 1902	J. Barrow	Miner	Ankle fractured.	Fall of slate.	Smoky Hollow C. Co.	Monroe.
September 11, 1902	J. W. Anderson	Timberman	Spine injured.	Fall of slate.	Consolidation C. Co.	Monroe.
September 18, 1902	Geo. Shortridge	Miner	Back injured.	Fall of slate.	Consolidation C. Co.	Monroe.
October 16, 1902	A. Wilson	Top hand	Leg broken.	Fell from dirt dump.	Hooking Coal Co.	Monroe.
November 8, 1902	S. Gugerich	Miner	Leg broken.	Fall of coal.	Ill. & Iowa Coal Co.	Appanoose
November 16, 1902	P. Morganda	Miner	Hip dislocated.	Fall of coal.	Star Coal Co.	Appanoose
November 16, 1902	W. M. Smith	Miner	Broken ankle.	Fall of coal.	Consumers Coal Co.	Appanoose
December 2, 1902	D. Wolf	Miner	Back injured.	Fall of slate.	Wapello Coal Co.	Monroe.
December 24, 1902	J. Gollis	Miner	Foot broken.	Fall of coal.	Star Coal Co.	Appanoose
January 9, 1903	J. Peckham	Driver	Leg broken.	Fell between cars.	Tipton Coal Co.	Appanoose
January 17, 1903	S. Coddington	Miner	Leg broken.	Fall of slate.	Numa Block Coal Co.	Wayne.
January 19, 1903	C. M. Roberts	Chunker	Leg broken.	Fell under car.	Smoky Hollow C. Co.	Monroe.
January 29, 1903	W. Burt	Miner	Leg broken.	Fall of coal.	Smoky Hollow C. Co.	Monroe.
February 1, 1903	Track layer	Foreman	Back injured.	Fall of slate.	Wapello Coal Co.	Monroe.
February 5, 1903	J. D. Clark	Miner	Foot injured.	Fall of slate.	Big Hill Coal Co.	Lucas.
February 5, 1903	M. Mischell	Miner	Foot injured.	Fall of slate.	Big Hill Coal Co.	Lucas.
February 18, 1903	F. Stice	Driver	Arm broken.	Struck by car.	Smoky Hollow C. Co.	Monroe.
	G. Mild	Miner	Back injured.	Premature explosion of dynamite.		
February 28, 1903	H. Matthews	Miner	Arm broken.	Fall of coal.	Wapello Coal Co.	Monroe.
March 18, 1903	F. Lanningham	Driver	Leg broken.	Run over by car.	Wapello Coal Co.	Monroe.
March 17, 1903	Geo. Hughes	Driver	Hand broken.	Felling timber.	Hooking Coal Co.	Monroe.
March 18, 1903	M. Davis	Driver	Arm broken.	Fell from tail chain.	Hooking Coal Co.	Monroe.
May 6, 1903	S. Seddon	Driver	Leg broken.	Run over by car.	Whitebreast Fuel Co.	Lucas.
June 7, 1903	John Price	Driver	Leg broken.	Fall of slate.	Whitebreast Fuel Co.	Monroe.
June 27, 1903	E. Winston	Miner	Wrist and leg broken.	Fall of slate.	Consolidation C. Co.	Monroe.

Fatal and serious accidents from July 1, 1901, to June 30, 1902, with relation to coal produced and number of employees.

COUNTY.	NUMBER OF ACCIDENTS		NUMBER OF TONS OF COAL PRODUCED.	TONS OF COAL PRODUCED FOR EACH ACCIDENT		NUMBER OF EMPLOYEES.	NUMBER OF EMPLOYEES FOR EACH ACCIDENT.	
	Fatal.	Serious.		Fatal.	Serious.		Fatal.	Serious.
Monroe	7	15	1,268,973	181,232	84,598	2,591	370	178
Appanoose		8	733,973		91,746	2,467		308
Lucas	8	2	235,463	78,439	117,734	449	189	224
Wayne			45,950			186		
Taylor			20,551			100		
Page			1,850			82		
Adams	1		1,765			112	112	
Total.....	11	25	2,318,585	210,776	92,741	5,937	589	237

Fatal and serious accidents from July 1, 1902, to June 30, 1903, with relation to coal produced and number of employees.

COUNTY.	NUMBER OF ACCIDENTS		NUMBER OF TONS OF COAL PRODUCED.	TONS OF COAL PRODUCED FOR EACH ACCIDENT.		NUMBER OF EMPLOYEES.	NUMBER OF EMPLOYEES FOR EACH ACCIDENT.	
	Fatal.	Serious.		Fatal.	Serious.		Fatal.	Serious.
Monroe	7	18	1,600,148	228,592	88,897	2,899	405	158
Appanoose	2	6	892,092	446,046	173,533	2,499	1,249	500
Lucas		3	269,539	184,769	89,846	529	264	176
Wayne		1	74,542		74,512	250		250
Taylor			20,618			96		
Page			9,674			45		
Adams			16,462			101		
Total.....	11	27	2,883,675	262,152	104,808	6,859	578	285

MINES IN OPERATION IN DISTRICT NO. 1, THEIR LOCATION, ETC.

MONROE COUNTY.

CORPORATION, FIRM OR OPERATOR.	Mine number.	LOCATION OF MINE.	RAILROAD CONNECTION, IF ANY.	Kind of open-Ing.	SYSTEM OF WORKING.	Kind of hoist.	Means of ventilation.
Wapello Coal company	3	1 mile west of Hiteaman	C. B. & O.	Shaft.	Room and pillar.	Steam.	Fan.
Wapello Coal company	4	3 miles northwest of Hiteaman	C. B. & O.	Shaft.	Room and pillar.	Steam.	Fan.
Smoky Hollow Coal company	4	Hynes	C. B. & O.	Slope.	Room and pillar.	Steam.	Fan.
Smoky Hollow Coal company	6	3 miles southeast of Hynes	C. B. & O.	Shaft.	Room and pillar.	Steam.	Fan.
Consolidated Coal company	10	2 1/4 miles southwest of Buxton	C. & N. W.	Shaft.	Room and pillar.	Steam.	Fan.
Consolidated Coal company	11	3 miles south of Buxton	C. & N. W.	Shaft.	Room and pillar.	Steam.	Fan.
Excelsior Coal company	11	1 1/2 miles west of Foster	C. M. & St. P.	Shaft.	Room and pillar.	Steam.	Fan.
Phillips Fuel company	6	West of Foster	C. M. & St. P.	Shaft.	Room and pillar.	Steam.	Fan.
Whitebreast Fuel company	10	Hilton	C. M. & St. P.	Shaft.	Room and pillar.	Steam.	Fan.
Hocking Coal company	2	Hocking	Iowa Central	Shaft.	Room and pillar.	Steam.	Fan.
Hocking Coal company	1	Southeast of Hocking	Iowa Central	Slope.	Room and pillar.	Steam.	Furnace.
Miller Creek Coal company	1	West of Coalfield	Iowa Central	Slope.	Room and pillar.	Steam.	Fan.
Miller Creek Coal company	2	Southeast of Coalfield	Iowa Central	Drift.	Room and pillar.	Steam.	Furnace.
Miller Creek Coal company	3	2 1/2 miles northeast of Albia	Iowa Central	Drift.	Room and pillar.	Steam.	Furnace.
Stat Coal company		1 1/4 miles north of Avery		Slope.	Room and pillar.	Steam.	Fan.
White Ash Coal company				Slope.	Room and pillar.	Steam.	Furnace.

APPANOOSE COUNTY.

Columbia Coal company	8	West of Brazil	K. & W.	Slope.	Long wall	Electricity	Furnace.
Centerville Block Coal company	7	West of Brazil	K. & W.	Slope.	Long wall	Horse	Furnace.
Brazil Coal company		Brazil	K. & W.	Drift.	Long wall		Furnace.
Phoenix Coal company		Brazil	K. & W.	Slope	Long wall	Steam	Furnace.
Centerville Block Coal company	5	Brazil	K. & W.	Slope	Long wall		Furnace.
Tippeco Co-operative Coal company		Brazil	K. & W.	Drift.	Long wall		Furnace.
Peacock Coal company		Brazil	K. & W.	Drift.	Long wall		Furnace.
Oriental Coal company		South of Brazil	K. & W.	Slope.	Long wall	Steam	Furnace.

APPANOOSE COUNTY—CONTINUED.

CORPORATION, FIRM OR OPERATOR.	Mine number.	LOCATION OF MINE.	RAILROAD CONNECTION, IF ANY.	Kind of open- ing.	SYSTEM OF WORKING.	Kind of holst.	Means of ventilation.
Domestic Coal company.....	8	1 mile southeast of Brazil.	K. & W. and Iowa Cen.	Shaft.	Long wall.	Steam.	Fan.
Centerville Block Coal company	1	West of Centerville.	K. & W.	Shaft.	Room and pillar.	Steam.	Fan.
Anchor Coal company.....	1	Centerville.	K. & W.	Shaft.	Room and pillar.	Steam.	Fan.
Scandinavian Coal company.....	1	1 1/4 miles southeast of Centerville.	K. & W.	Shaft.	Room and pillar.	Steam.	Fan.
Hewey Coal company.....	1	1 1/4 miles southeast of Centerville.	K. & W.	Shaft.	Room and pillar.	Steam.	Fan.
Hocking Valley Coal company.....	1	1 1/4 miles southwest of Centerville.	K. & W.	Shaft.	Room and pillar.	Steam.	Fan.
Mendota Coal and Mining company	1	1 1/4 miles southwest of Centerville.	K. & W.	Slope.	Room and pillar.	Horse.	Furnace.
Mendota Coal and Mining company	2	West of Centerville.	K. & W.	Slope.	Room and pillar.	Horse.	Furnace.
Thistle Coal company.....	2	Centerville.	K. & W.	Shaft.	Long wall.	Steam.	Fan.
Thistle Coal company.....	2	Southeast of Centerville.	K. & W.	Shaft.	Long wall.	Steam.	Fan.
Tubiste Coal company.....	2	1 1/4 miles east of Centerville.	K. & W.	Shaft.	Long wall.	Steam.	Fan.
Tubiste Coal company.....	2	1 1/4 miles east of Centerville.	K. & W.	Shaft.	Long wall.	Steam.	Fan.
Royal Coal company.....	2	1 1/4 miles east of Centerville.	K. & W.	Shaft.	Long wall.	Steam.	Fan.
Centerville Block Coal company	2	Northeast of Exline.	K. & W.	Shaft.	Long wall.	Steam.	Fan.
Numa Coal company.....	2	Numa.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Anchor Coal company.....	2	8 1/2 miles southwest of Centerville.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Centerville Block Coal company	2	9 miles south of Centerville.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Centerville Block Coal company	2	East of Centerville.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Centerville Block Coal company	10	West of Centerville.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Illinois and Iowa Coal company	9	Fortnash.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Consumers Coal company.....	9	Jerome.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Big Jo Coal company.....	1	1 1/4 miles east of Jerome.	K. & W.	Slope.	Long wall.	Steam.	Fan.
F. H. Jackett Coal company.....	1	8 miles southwest of Mystic.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Columbia Coal company.....	4	Diamond.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Peerless Coal company.....	4	1 1/4 miles west of Mystic.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Peerless Coal company.....	4	1 1/4 miles west of Mystic.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Peerless Coal company.....	4	West of Mystic.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Peerless Coal company.....	1	Mystic.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Artic Coal company.....	1	West of Mystic.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Acken Coal company.....	1	West of Mystic.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Acken Coal company.....	1	West of Mystic.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Peerless Coal company.....	7	West of Mystic.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Mystic Coal company.....	7	West of Mystic.	K. & W.	Slope.	Long wall.	Steam.	Fan.
Big Three Coal company.....	7	West of Mystic.	K. & W.	Slope.	Long wall.	Steam.	Fan.

Lodwick Bros. Coal company	2	Myrtle	C. M. & St. P.	Shaft	Long wall	Steam	Fan
Peerless Coal company	6	Myrtle	C. M. & St. P.	Drift	Long wall	.....	Furnace.
McGrann Coal company		Myrtle	C. M. & St. P.	Drift	Long wall	.....	Furnace.
Phillips Bros.	3	Myrtle	C. M. & St. P.	Drift	Long wall	.....	Furnace.
Peerless Coal company	1	Myrtle	C. M. & St. P.	Slope	Long wall	Horse	Furnace.
Lodwick Bros. Coal company		1½ miles east of Mys to	C. M. & St. P.	Shaft	Long wall	.....	Fan
Orr Bros.		Clarkdale	C. M. & St. P.	Shaft	Long wall	.....	Fan
Diamond Block Coal company		Rathbun	C. M. & St. P.	Shaft	Long wall	.....	Furnace.
Star Coal company		East of Rathbun	C. M. & St. P.	Shaft	Long wall	Horse	Fan
Geo. Gill		Darby	C. M. & St. P.	Slope	Long wall	.....	Furnace.
Manufacturers Coal & Coke company	30	1½ miles south of Centerville	C. M. & St. P.	Shaft	Room and pillar	.....	Fan
Happy Coal company		Centerville	L. & St. L.	Shaft	Long wall	Horse	Furnace.
Star Coal company		Centerville	.....	Shaft	Room and pillar	Horse	Furnace.
Monitor Coal company		Centerville	.....	Shaft	Room and pillar	Horse	Furnace.
Rock Valley Coal company		1 mile northeast of Centerville	.....	Shaft	Room and pillar	Horse	Furnace.
White Oak Coal company		Centerville	.....	Shaft	Room and pillar	Horse	Furnace.
Superior Coal company		South of Jerome	.....	Shaft	Long wall	Horse	Furnace.
White Oak Coal company		North of Exline	.....	Shaft	Room and pillar	Horse	Furnace.

LUCAS COUNTY.

White Breast Fuel company	4	Cleveland	C. B. & Q.	Shaft	Room and pillar	Steam	Fan
Big Hill Coal company		Lucas	C. B. & Q.	Shaft	Room and pillar	.....	Fan
Inland Fuel company		8½ miles northeast of Chariton	.....	Shaft	Room and pillar	.....	Fan

WAYNE COUNTY.

Numa Block Coal company	2	1 mile northeast of Seymour	C. M. & St. P.	Shaft	Long wall	Steam	Fan
Numa Block Coal company	8	Seymour	C. R. I. & P.	Shaft	Long wall	.....	Fan
J. L. Slack		Harvard	.....	Shaft	Long wall	Horse	Furnace.
E. A. Sipes		4 miles south of Confidence	.....	Shaft	Long wall	Horse	Furnace.
L. Frye		1½ miles south of Confidence	.....	Shaft	Long wall	Steam	Fan

TAYLOR COUNTY.

Tomlinson & Miller	1	East of New Market	Burlington	Shaft	Long wall	Horse	Furnace.
Campbell Coal company	2	East of New Market	Burlington	Shaft	Long wall	Horse	Furnace.
Wm. Browning		East of New Market	Burlington	Shaft	Long wall	Horse	Furnace.
N. Easter		2 miles east of New Market	.....	Shaft	Long wall	Horse	Furnace.
Wm. Welch		2 miles east of New Market	.....	Shaft	Long wall	Horse	Furnace.

PAGE COUNTY.

CORPORATION, FIRM OR OPERATOR.	Mine number.	LOCATION OF MINE.	RAILROAD CONNECTION, IF ANY.	Kind of opening.	SYSTEM OF WORKING.	Kind of hoist.	Means of ventilation.
Johnston & Company		3 miles west of Clarinda		Shaft.	Long wall	Horse	Furnace
J. W. Berry Coal company		2 miles southwest of Clarinda		Shaft.	Long wall	Horse	Furnace
Winger Bros.		2 1/2 miles southwest of Clarinda		Shaft.	Long wall	Horse	Furnace
I. Vavardal		West of Clarinda		Shaft.	Long wall	Horse	Furnace

ADAMS COUNTY.

W. S. Ellenwood		Eureka		Shaft	Long wall	Horse	Furnace
J. M. Henton		Eureka		Shaft.	Long wall	Horse	Furnace
M. Collins		Carbon		Shaft.	Long wall	Horse	Furnace
M. Jones		Carbon		Shaft.	Long wall	Horse	Furnace
Acme Park		Carbon		Shaft.	Long wall	Horse	Furnace
J. E. Wild		Carbon		Shaft.	Long wall	Horse	Furnace
J. F. Ruth		Carbon		Shaft.	Long wall	Horse	Furnace
Ed. Spangur		4 miles west of Carbon		Shaft.	Long wall	Horse	Furnace
Phillips Coal company		Briscoe		Shaft.	Long wall	Horse	Furnace

MONROE COUNTY.

The production of 1,600,000 tons of coal last year by the nineteen mines of Monroe county, places it at the head of the coal producing counties of Iowa, and it seems certain that it will retain that position for years to come. The largest mines in the state are located here and their number is rapidly increasing. Five railroads are available for coal shipment. Connected with the Chicago, Burlington and Quincy railroad are mines of the Wapello Coal company and the Smoky Hollow Coal company; the Chicago and North-Western railway carries the product of the mines of the Consolidated Coal company; on the Iowa Central railway are located the mines of the Hocking Coal company, the Central Coal company and the Miller Creek Coal company; tributary to the Chicago, Milwaukee and St. Paul railroad are the mines of the Whitebreast Fuel company of Illinois, the Excelsior Coal company and the Phillips Fuel company. One railroad, the Wabash, has so far no mines connected with its line running through the county. Two mines, the White Ash mine, near Avery, and the Star mine, northwest of Albia, have no railroad connection, although considerable coal is shipped from them.

The coal measures of the county are comparatively shallow and contain several workable seams of coal. The thin upper seams, two feet and less in thickness, are worked only in a small way in a few places during the winter for home trade, and their development on a large scale is yet a long way off. The seam now so extensively worked, has a thickness of from three to seven feet, lies fairly level, is reached by shafts and slopes and is worked on the room and pillar plan.

Seven fatal accidents occurred in the mines of Monroe county during the year ending June 30, 1902, and seven during the year ending June 30, 1903. While the number of fatal accidents in each year was the same, the last year showed quite an improvement over its predecessor. In the first year 181,282 tons of coal were mined for each life lost; in the second year 228,592 tons were produced for each fatal accident. In the first year one death occurred to every 370 men employed; in the second year the ratio was lowered to one death to every 405 employees.

All the large mines are ventilated by fans and only four of the smaller ones have furnaces. The ventilation of most of these mines was, in a general way, satisfactory, but in a few, considerable difficulty was experienced in airing them properly. Natural disadvantages, mistakes in mine development, extensive airways of rather small dimensions and other drawbacks together with low fan efficiency made the problem of ventilating them an extremely hard one to solve. Nearly all the fans in the county showed a rather low efficiency against a heavy mine resistance, because incapable of producing a correspondingly high water gauge. The fan on No. 10 mine of the Consolidation Coal company gave better results in this respect than any other fan in the county. Considerable work was done in the last year

to improve the sanitary condition of the mine, and fair progress has been made in this direction.

Judging from the number of new mines already commenced or contemplated in the near future and the improvements made in the mines now running, a large increase in the coal production of Monroe county may be expected the coming year. The Consolidation Coal Co. has started and will develop extensively several mines which promise to become large producers. The Central Coal Co. is opening a new slope, the Smoky Hollow Coal Co. is preparing to sink slope No. 7, the new mine of the Excelsior Coal Co. is being rapidly developed, and the Wapello Coal Co. and the Hocking Coal Co. have lately completed extensive improvements in their mines to facilitate the rapid handling of the coal output. With a fair market and no break in the friendly relations between the operators and miners, the coal production of Monroe county for the coming year will probably exceed 1,800,000 tons.

APPANOOSE COUNTY.

While Monroe county heads the list of coal producing counties of the state, as far as coal production is concerned, Appanoose county stands in front as having a larger number of mines than any other county in Iowa. The amount of coal produced by the Appanoose county mines was the largest annual production, since mining commenced in the county, and far exceeded that of any former year; yet, large as it was, it has not done justice to the remarkable mineral resources of this county. Without adding a single new mine to the present number, its annual coal production could be made to surpass that of any other county in Iowa, but to accomplish this, the slow and somewhat crude system of handling coal, that has been followed for years, must be improved.

The Iowa Central Railway, the Chicago, Milwaukee and St. Paul, the Rock Island, two branches of the Burlington system and the Iowa and St. Louis Railway furnish shipping facilities for the coal product of the county. The Wabash, running through the eastern portion of the county, is the only railroad having no mines connected with it. The Chicago, Milwaukee and St. Paul railroad serves the greater number of mines, twenty-six; next comes the Keokuk and Western with thirteen; then the Chicago, Burlington and Kansas City with eight. The Rock Island road has six mines on its line, the Iowa Central three, and the Iowa and St. Louis one. Besides these mines a number of small ones are worked in different parts of the county; a few of these ship a little coal during the winter, the others are operated for local trade only.

The coal seam now worked, while thin, averaging about two and one-half feet in thickness, is very valuable on account of its easy accessibility, regularity, quality and extent. Its area in the county covers probably more than two hundred and fifty square miles. The long wall method of working the seam is generally used, although in some of the mines near Centerville and Cincinnati the room and pillar plan is given the preference. Mining machines are used in some of the mines near Centerville and Mystic. The Lee long wall machine, especially designed for this seam, is run by electricity and does

good work. The Legg and Harrison machines, used in the mines of the Centerville Block Coal Co., are run by compressed air and have been in successful operation for a number of years.

In point of safety the mines compare favorably with any mines in the United States. Only two fatal accidents occurred in them during the last two years. More than 300,000 tons of coal were mined for each life lost, and the ratio of deaths to number of men employed was 1 to about 1,250. But, while all the mines showed an excellent record for safety, a large number were found deficient in ventilation. In the last year, however, much has been done to overcome this difficulty. Seven air shafts have either been sunk or have been started and will soon be completed, and other improvements have been made or are under way to better conditions.

The work done in this direction has been especially noticeable in the mines along the C., B. & K. C. railroad; especial credit being due to the Thistle Coal Co. and the Mendota Coal and Mining Co. for the improvements made in their mines near Cincinnati. The Peerless Coal Co., operating several mines in and near Mystic, also deserves credit for the work it has done and is doing to better the conditions of its mines.

LUCAS COUNTY.

The number of mines worked in this county have not been increased in the last two years. The amount of coal mined in that time, however, shows an increase of 122,018 tons over the production during the preceding biennial period. The largest mine is located at Cleveland and is operated by the Whitebreast Fuel Co. of Illinois. Its product is shipped over the C., B. & Q. railroad. The only other mine having railroad connection is operated by the Big Hill Coal Co. at Lucas. The Inland Fuel Co.'s mine, northeast of Chariton, is as yet without railroad facilities, and on that account has been seriously hindered in development work and in marketing the coal produced.

The coal seam worked belongs to the lower measures; its thickness varies from three and one third to seven feet, lies fairly level and at considerable depth from the surface. The depth of the shaft of the Whitebreast Fuel company is 321 feet, that of the shaft of the Big Hill Coal company 274 feet and the Inland Fuel company's shaft is 250 feet deep. All the mines are worked on the room and pillar plan. The vein is not a compact or regular one, but occurs in basins of varying extent. Often adjacent basins are connected by a thin stratum of coal, but sometimes they are found bounded on all sides by barren ground. Under such conditions it will be apparent that only thorough and systematic prospecting can locate and determine the extent of these basins and furnish fairly accurate proof as to whether they can be worked profitably or not.

Notwithstanding the fact that five fatal accidents occurred in and about above three mines in the last two years, and that comparison with other counties with regard to fatal accidents makes the record of Lucas county in this respect appear a very poor one, it should not be assumed that these mines are more dangerous or that they are less efficiently managed than the

mines elsewhere in the district, and the proof that the mines are fairly well looked after and that they can compare favorably with other mines is, in a measure, furnished by the accidents themselves. One man was killed outside of the mines and four men were killed in the mines. Of the latter four, one was a driver, one a shotfirer and two were timbermen. That the list does not include miners is remarkable and an indication that their working places were not only fairly safe, but that they exercised due care in protecting themselves against possible danger. The timbermen were killed, while following the instructions of the mine foreman to keep the haulage and traveling roads in safe condition, in the performance of their usual work. The death of McDowell, the shotfirer, who was killed by an explosion in mine No. 4, Cleveland, on January 6, 1902, could have been avoided, had said McDowell been more careful in his work. It is gratifying to me to be able to state that the blasting of coal is performed under safer conditions than formerly. Since the passage of the shot examination law no one has been injured through the use of explosives in the mines of this county.

WAYNE COUNTY.

A considerable portion of Wayne county appears to be underlaid with workable coal, but mining so far has not been carried on very extensively. Upwards of 74,000 tons of coal were produced in the county last year, more than two thirds of this amount coming from one mine, the Big Jim, operated by the Numa Block Coal company. The remainder came from the mine of the Seymour Coal company, recently acquired by the Numa Block Coal company, and local mines in the vicinity of Harvard and Confidence. The Numa Block Coal company is now the only shipper of coal and its mines are located on the Rock Island road and the Milwaukee near Seymour. The vein of coal worked is a continuation of the Appanoose vein, slightly thinner and at Seymour lies at a considerable depth below the surface, the two shafts there being 202 and 245 feet deep respectively. The Big Jim mine gives fair promise to produce more coal the coming year than any other mine in the Appanoose-Wayne field. Had it not been for a fire which destroyed its engine and boiler house last winter and caused a stoppage of work for nearly two weeks, this mine would have probably headed the list last year; as it was, its coal output last year was only exceeded by one mine in Appanoose county by a few thousand tons.

The Wayne county mines are worked long wall, and in point of safety are about equal to the mines of Appanoose county. Their sanitary condition is fairly satisfactory.

No fatal accident occurred in the mines during the last two years, and only one serious accident was reported in that time.

TAYLOR COUNTY.

Nearly all the mines in this county are located in the vicinity of New Market. They are, like the coal worked in them, small. Three of them do a shipping business and a ready market for all the coal they can produce is

found in Clarinda and other near towns. The coal is about sixteen inches thick, is reached by shafts and is worked long wall. The safety devices of some of the mines have been recently improved and the mines are about as safe as any in the state. On account of the small extent of the mines and the method of working them, their ventilation is easily accomplished and generally satisfactory.

PAGE COUNTY.

As far as comparative gain in coal production for last year is concerned, Page county is far ahead of any county in the state. In the year ending June 30, 1902, its coal production amounted to 1,850 tons, last year it was 9,674 tons, an increase of more than 500 per cent. All the mines, four in number, are located near Clarinda. They have no railroad connection, but home demand gives them a ready market for all the coal they can produce.

The vein worked averages less than eighteen inches in thickness and is reached by shafts, some of them nearly 200 feet deep. The coal is worked Long wall. The mines are equipped with the necessary safety devices, are easily ventilated and the mine workings are kept in fairly safe and satisfactory condition.

ADAMS COUNTY.

None of the mines of Adams county ships coal by rail; the entire output is sold in the home market, and in the winter the demand often exceeds the supply. In the summer very little mining is done.

The coal seam averages about sixteen inches in thickness, is reached by shallow shafts and is worked long wall. The mines are located near Carbon, Briscoe, Eureka and Hoyt. Ventilation is produced by small furnaces, and in cold weather natural ventilation is generally sufficient to air the mines satisfactorily.

The underground work is done under much safer conditions than exist in the large mines of the central part of the state; accidents of a serious nature are very rare and the experienced and careful miner runs little risk of injury. The one fatal accident, which occurred during the last two years, appears to have been due to inexperience and carelessness on the part of the deceased.

List of corporations, firms, and individuals operating mines in the first district, their post office address and shipping facilities, if any.

MONROE COUNTY.

CORPORATION, FIRM OR INDIVIDUAL	POST OFFICE ADDRESS.	SHIPPING FACILITIES.
Consolidation Coal company.....	Buxton	Chicago & Northwestern.
Wapello Coal company.....	Hiteman	Chicago, Burlington & Quincy.
Smoky Hollow Coal company.....	Avery	Chicago, Burlington & Quincy.
Excelsior Coal company.....	Foster	Chicago, Milwaukee & St. Paul.
Phillips Fuel company.....	Foster	Chicago, Milwaukee & St. Paul.
Whitebreast Fuel Company of Illinois..	Ottumwa	Chicago, Milwaukee & St. Paul.
Hocking Coal company.....	Hocking.....	Iowa Central.
Central Coal company.....	Albia	Iowa Central.
Miller Creek Coal company.....	Coalfield	Iowa Central.
Star Coal company.....	Albia	Chicago, Burlington & Quincy.
White Ash Coal company.....	Avery	Chicago, Burlington & Quincy.

APPANOOSE COUNTY.

Columbia Coal company.....	Centerville ..	Keokuk & Western and Chicago, Milwaukee & St. Paul.
Centerville Block Coal company.....	Centerville ..	Keokuk & Western, Iowa Central, and Chicago, Rock Island & Pacific.
Brazil Coal company.....	Centerville ..	Keokuk & Western.
Phoenix Coal company.....	Brazil	Keokuk & Western.
Tipton Co-operative Coal company.....	Brazil	Keokuk & Western.
Peacock Coal company.....	Brazil	Keokuk & Western.
Oriental Coal company.....	Centerville ..	Keokuk & Western.
Domestic Coal company.....	Centerville ..	Keokuk & Western.
Anchor Coal company.....	Centerville ..	Keokuk & Western and Chicago, Rock Island & Pacific.
Scandinavian Coal company.....	Centerville ..	Keokuk & Western.
Dewey Coal company.....	Centerville ..	Keokuk & Western.
Hocking Valley Coal company.....	Cincinnati ..	Chicago, Burlington & Kansas City.
Mendota Coal and Mining company,....	Cincinnati ..	Chicago, Burlington & Kansas City.
Thistle Coal company.....	Cincinnati ..	Chicago, Burlington & Kansas City.
Exline Coal company.....	Exline.....	Chicago, Burlington & Kansas City.
Royal coal company.....	Tabor	Chicago, Burlington & Kansas City.
Numa Block Coal company.....	Seymour.....	Chicago, Rock Island & Pacific.
Illinois and Iowa Coal company.....	Ottumwa	Iowa Central.
Consumers coal company.....	Cedar Rapids..	Chicago, Milwaukee & St. Paul.
Big Jo Coal company.....	Harkee.....	Chicago, Milwaukee & St. Paul.
F. H. Juckett Coal company.....	Cedar Rapids..	Chicago, Milwaukee & St. Paul.
Peerless Coal company.....	Centerville ..	Chicago, Milwaukee & St. Paul.
Egypt Coal company.....	Mystic	Chicago, Milwaukee & St. Paul.
Arctic Coal company.....	Mystic	Chicago, Milwaukee & St. Paul.
Acken Coal company.....	Mystic	Chicago, Milwaukee & St. Paul.
Mystic Coal company.....	Mystic	Chicago, Milwaukee & St. Paul.
Big Three Coal company.....	Mystic	Chicago, Milwaukee & St. Paul.
Lodwick Bros. Coal company.....	Mystic	Chicago, Milwaukee & St. Paul.
McGran Coal company.....	Mystic	Chicago, Milwaukee & St. Paul.
Orr Bros.....	Mystic	Chicago, Milwaukee & St. Paul.
Diamond Block Coal company.....	Mystic	Chicago, Milwaukee & St. Paul.
Star Coal company.....	Rathbun.....	Chicago, Milwaukee & St. Paul.
Stone Coal company.....	Mystic.....	Chicago, Milwaukee & St. Paul.
Geo. Gill.....	Darby.....	Chicago, Milwaukee & St. Paul.
Manufacturers Coal and Coke company	Centerville ..	Iowa & St. Louis.

APPANOOSE COUNTY—CONTINUED.

CORPORATION, FIRM OR INDIVIDUAL	POST OFFICE ADDRESS.	SHIPPING FACILITIES.
Happy Coal company.....	Centerville.	
Star Coal company.....	Centerville.	
Monitor Coal company.....	Centerville.	
Rock Valley Coal company.....	Centerville.	
White Oak Coal company.....	Centerville.	
H. W. Farnsworth.....	Exline.	
Superior Coal company.....	Jerome.	
R. Campbell.....	Brazil.	

LUCAS COUNTY

Whitebreast Fuel Co. of Illinois.....	Ottumwa.....	Chicago, Burlington & Quincy.
Big Hill Coal Co.....	Lucas.....	Chicago, Burlington & Quincy.
Inland Fuel Co.....	Chariton.....	

WAYNE COUNTY

Numa Block Coal company.....	Seymour.....	U. M. & St. P. and C. R. I. & P.
J. L. Black.....	Harvard.....	
E. A. Sipes.....	Promise City.	
L. Frye.....	Promise City.	

TAYLOR COUNTY.

Tomlinson & Miller.....	Newmarket. ..	Chicago, Burlington & Quincy.
R. Campbell Coal company.....	Newmarket. ..	Chicago, Burlington & Quincy.
Wm. Browning.....	Newmarket. ..	Chicago, Burlington & Quincy.
Wm. Welch.....	Newmarket.	
N. Easter.....	Newmarket.	

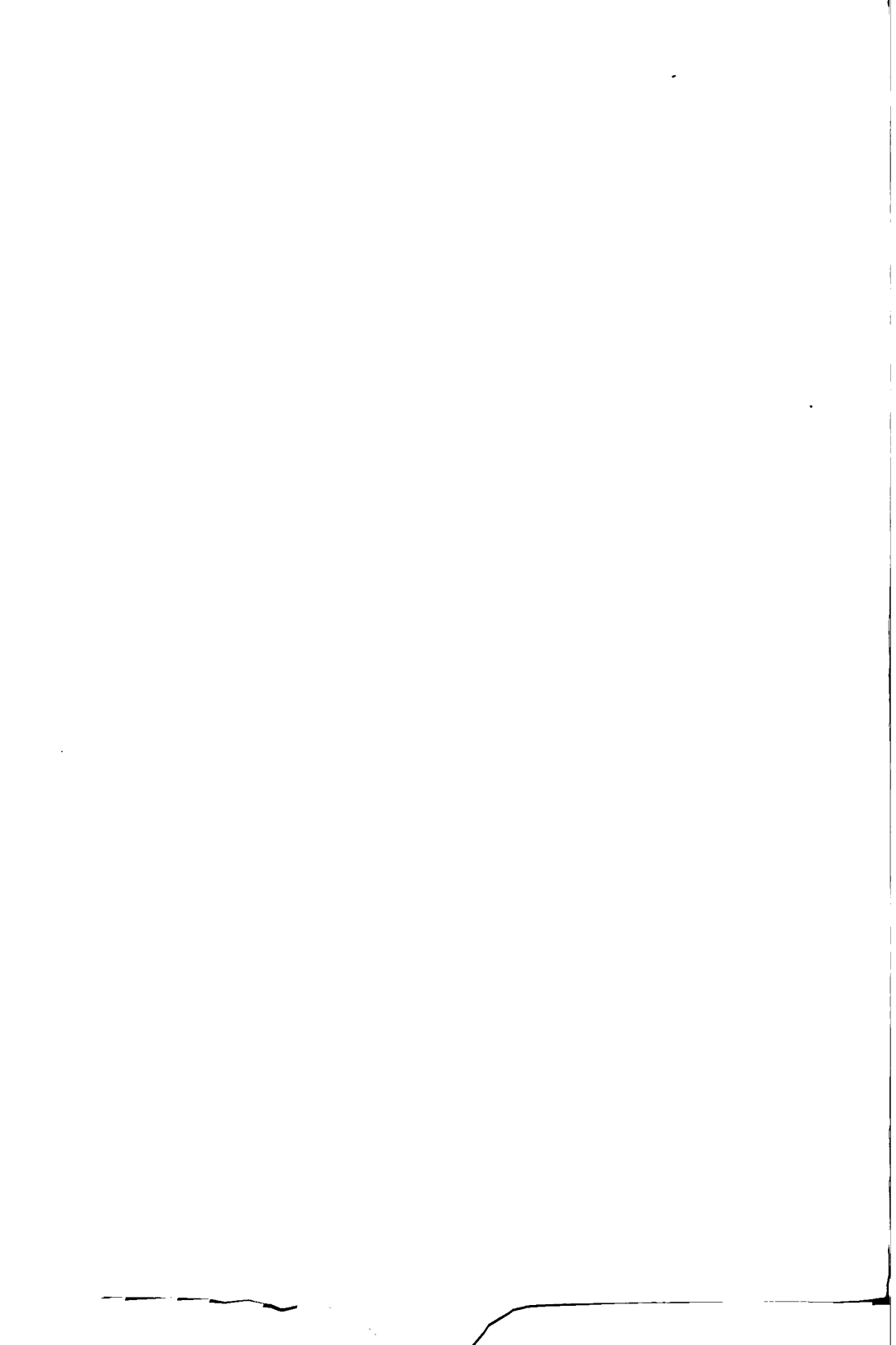
PAGE COUNTY.

Johnston & Company.....	Clarinda.	
J. W. Berry Coal company.....	Clarinda.	
Winger Bros.....	Clarinda.	
I. Vanarsdal.....	Clarinda.	

ADAMS COUNTY.

W. S. Ellenwood.....	Eureka.	
J. M. Henton.....	Eureka.	
Wm. Collins.....	Carbon.	
M. Jones.....	Carbon.	
Reese & Perks.....	Carbon.	
J. F. Wild.....	Carbon.	
J. F. Ruth.....	Carbon.	
Eclipse Coal Mining company.....	Briscoe.	
Jas. Spargur.....	Nodaway.	

SECOND DISTRICT.



LETTER OF TRANSMITTAL.

HON. ALBERT B. CUMMINS, Governor of Iowa.

Sir,—I submit herewith my first report as Inspector of Mines, covering a period of fifteen months' service, and furnishing such data as was available, to include, from the nine months' service of my predecessor.

Fiscal biennial period ending June 30, 1903.

EDWARD SWEENEY,
Inspector Second District.

REPORT OF SECOND DISTRICT.

This district includes the following counties: Warren, Marion, Mahaska, Keokuk, Wapello, Davis, Van Buren and Jefferson.

There are ninety-seven mines producing coal in the counties named and the tonnage production for the period reported aggregate 3,009,125 tons

There are 3,142 miners and employes engaged in the district.

The conditions governing in the matter of tonnage prices and wages are mutually satisfactory between miners and operators. Wages are higher than at any period of coal mining in Iowa, and the rates as herewith furnished are based upon an eight hour work day and would indicate the happy harmony that obtains throughout the coal mining districts.

RATE OF WAGES PAID IN THE SECOND DISTRICT FOR AN EIGHT HOUR DAY.

1903 SCALE YEAR.

Ninety-five cents per ton, screen coal and varies to meet changes in natural conditions.

8 foot entry per yard.....	\$2.47
12 foot entry per yard	1.90
Room turning each, not to exceed nine foot neck	5.04
Track layers, timbermen, cagers per day	2.56
Drivers, trip riders and water haulers per day.....	2.56
Track layers and timbermen helpers per day.....	2.36
Boy couplers per day.....	1.52
Oilers per day.....	1.40
Trappers per day, boys.....	1.13
Electric motormen and spike team drivers, when engaged in regular switching, per day.....	2.70
All other inside adult labor per day.....	2.36

Stable men to receive $12\frac{1}{4}$ cents advance over wages of 1902 scale year.

Boy drivers may be used between partings, but when used at regular switchings they shall be considered as men, and receive men's wages.

Where the company does the sharpening the price of blacksmithing shall be $1\frac{1}{2}$ per cent of the gross earnings, provided that the miner's tools be given preference over all other work done by the blacksmith.

TOP LABOR.

The price for dumpers, chunkers, screening car men, and all other common top labor shall be advanced $12\frac{1}{2}$ per cent over wages of 1902, provided that no company shall be required to figure from a higher wage than \$1.70 per day, and provided further, that no one receiving more than \$1.90 shall be reduced.

Sinkers per day of eight hours.....\$2.70

The wage earnings as herewith furnished are net, excepting the cost of lamp oil to the day wage hands and smithing, oil and blasting powder to miners. Oil is usually sold at the mine for 60 cents per gallon, while powder is furnished by mutual agreement for \$2.00 per keg. The coal tonnage produced with each keg of powder varies, according to the skill and efficiency of the miner, and the thickness of coal, with other natural conditions, such as water, bad top and sulphur and dirt bands encountered.

ACCIDENTS.

During the period covered by this report there has been thirty-six fatal and fifty-three non-fatal accidents in this district. It seems that while time lasts and men mine coal there will be accidents in connection with the industry. Were it not for much unnecessary risk and carelessness among men the number of mine accidents would be materially lessened.

The Lost Creek explosion, the greatest catastrophe occurring in the annals of Iowa's coal mining, happened on January 24, 1902, about ten miles from Oskaloosa, in Mahaska county, and a list of dead and injured is herewith furnished:

THE DEAD.

John Elder, white; Russell Fish, white; John Bert, white; John Kovall, white; Samuel Humphrey, white; Daniel (Boone) Fish, white; Michael Fox, Sr., white; David Walters, white; Andrew Pash, white; Joseph Gaspari, white; Alexander Gray, white; John Meneally, white; John Martin, white; George Denchok, white; James Humphrey, white; Charles S. Crews, white; Michael Fox, Jr., white; Sylvester C. Crayton, colored; John C. Stovall, colored.

LOST CREEK INJURED.

John Jurkin, George Gogo, Jonas Mable, Jr., Oliver Mable, Charles Laman, Frank Secress, Edward Swanson William Booth, William Fothergill George Fothergill, Mathew Aday, William Harvey, Harry Darracks, Asa Sullivan.

We have in this list twenty dead and fourteen injured as a result of one mine accident. I shall not venture to give particulars of this explosion. It occurred ten weeks before my entering the service as mine inspector. A special inquiry and investigation was speedily instituted. The Governor's commission of competent men, operators and miners, made a searching inquiry, reporting their findings, copies of which have been distributed and such is filed in the Inspectors' office.

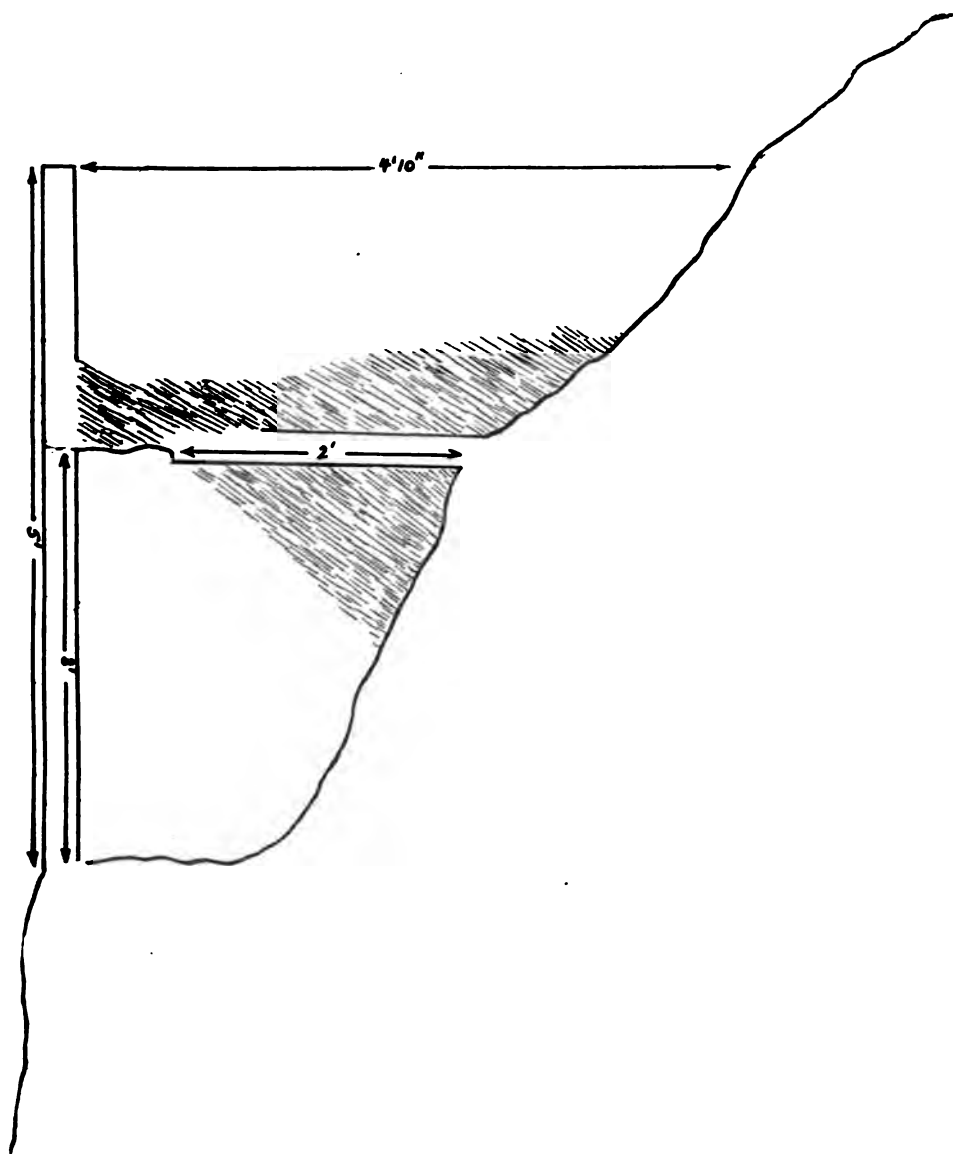
I submit, however, the report of the commission herewith, as bearing directly upon the Lost Creek explosion, with the "Diagram" locating the place of accident producing such awful results. The observations, suggestions and recommendations of the commission, is quite comprehensive and general in character, and might profitably be studied, in connection with the Eleventh Volume of Iowa Coal statistics.

FINDINGS OF COMMISSION AT MINE NO. 2, LOST CREEK.

"The commission organized for the work before it on the seventeenth of February, 1902, by electing Hon. T. J. Phillips chairman, and Mine Inspector John Verner, secretary. It was thought advisable before taking up the

work, to visit mine No. 2 of the Lost Creek Fuel company in Mahaska county, to afford each member of the commission the opportunity to make a personal examination and investigation as to the condition of the mine and the cause of the explosion which occurred in that mine about noon, January 24, 1902. The mine was visited on February 18th. The damage done by the explosion to doors and stoppings had been repaired, the mine was found in good condition, and its ventilation ample. The evidence of the miners, who had worked in this mine prior to the explosion, and in that part of it affected by it, showed that the air had been well conducted and of sufficient volume to assure efficient ventilation of the working places. It had been and is now the practice to slow down the fan just before firing time and keep it moving slowly until after the completion of the firing.

The explosion undoubtedly started in room No. 10, on the second north on the east side. This room is about 500 feet distant from the hoisting shaft, was driven in the distance of fifty feet from the entry, and had not break-throughs connecting it with the adjacent rooms. Andrew Pash, the miner who worked in No. 10, and who was among the killed, had charged two holes on the forenoon of January 24th, one on the left rib, the other near the right rib of the place. The former hole only was fired and the explosion originated from it. Mr. Jonas Mabie, Jr., a driver, who hauled coal from No. 10 room before the explosion, and whose work caused him to be in that room on the morning of January 24th, made the positive statement before all the members of the commission, that the hole in question had been fired at quitting time Thursday, January 23rd; that it had blown the tamping at that time and had been recharged on Friday forenoon, January 24th. In the opinion of the commission it is very probable that the size of the charge was increased also. The hole was five feet deep, four feet, ten inches on the point, slim heel, coal three feet, eleven inches high below the black jack, which did not shoot with the coal. The shot blew the tamping at the second firing, but the dangerous feature about it, and which proved the real cause of the explosion, was part of an old hole, two feet deep, left on from a former shot, that had been drilled at right angles to the hole on the rib, three feet from the mouth of the latter hole, a little below it, and within seven and one half inches of tapping the same (see sketch.)



SHOT FIRED ON JANUARY 24, 1902, IN NO. 2 MINE, LOST CREEK, IOWA, IN
ROOM 10, SECOND NORTH, EAST SIDE.

"The side of the hole on the rib was evidently shattered by the charge exploding in it the first time, and when the second charge was fired in the same hole, communication between it and the old hole was easily established, if it had not been established before, and through it and the fissures near it the flaming gases were projected into the room with great force and so intensely hot that the thin layer of coal adhering to the roof was blistered and burned. Along the right rib a considerable amount of soot and cooked dust furnished additional evidence of intense heat. It is undoubtedly true that the dust stirred up in this room by the firing of the shot and ignited by the flaming gases increased the initial force of the explosion considerably.

"Not more than six shots were fired in the territory traversed by the explosion. Probably two shots were fired in No. 12 on the second north, one in No. 10, one in the stub entry off No. 9, and one in No. 9. One shot was fired in the first room working on the main east.

"The flame evidently traveled close to the roof. Not a keg or vessel containing powder was exploded, although in several instances the stoppers had been removed, and several dinner pails found in low positions, having wooden handles painted and varnished, that would show the effects of fire, while covered thickly with soot, showed no evidence of fire having touched them.

"There is a decided similarity in the manner in which this explosion was caused and the explosion at Como, Col., on January 9, 1893, which resulted in the death of twenty-four miners. Both were due to the presence of parts of old holes previously drilled and fired in the piece of coal intended to be removed by a second shot. In the Como mine a hole had been drilled by one of the miners and the charge fired. As the place chosen for this hole was not favorable for blowing down coal, it was a comparatively ineffectual shot. A second hole was placed close to the first and charged. When it exploded, instead of blowing down coal, it broke into the first hole and the flame of the powder extended out into the chamber and the explosion resulted."

STRIKES.

There has been very little in the way of mining troubles in this district during the past two years. The general question of a mining price and miners wages, being agreed to by and through mutual concession, between operators and miners, as a result of the joint conciliatory movement of bituminous mine owners and miners. While much valuable time is spent in connection with this work by both parties to the agreement, in conventions, general and local, the settlement of mining prices to govern throughout the coal producing sections of our state, for what is known as the scale year, is a happy arrangement, and it is generally conceded that the labor and time, together with the convention expenses, is labor and money well and profitably spent.

There is secured to our people identified with or depending upon this industry, work and wages and coal fuel for the year, without strikes, idleness and consequent hardships and troubles. Our citizens as a whole owe much to the patience, intelligence and sacrifices of the men who have achieved such peaceful results in this great industry. Men representing and controlling millions of dollars in coal properties, paying out annually in

wages vast sums, and to the thousands of mine workers, whose horny hands and strong muscles produce for the use and comfort of our whole people millions of tons of coal annually, such forces meeting together, discussing rationally, questions of common concern, from the point of view each represents and thinks best, is a most commendable movement in our industrial life, concluding their labors in peace and good will. Uniting their joint efforts at the banquet table, where speeches, songs and story obtain as the sessions *sine die* is proclaimed by the master of ceremonies.

To the coal miners' union officers and the coal operators' state officials and commissioner much credit is due for the success that has attended the joint movement of coal operators and coal miners in this state. Such local mine troubles as do occur and where differences are prolonged, it is due entirely to the unfair attitude of local men, sometimes miners and sometimes the mine managers, who fail to comprehend or refuse to recognize the constitution of the miners' union and the terms of the joint agreement. Fortunately men of this calibre are becoming happily less numerous in power and position, so that the future promises a greater degree of peace and good will to the mining industry of Iowa.

SCALES AND WEIGHING OF COAL.

From various causes the scales may become insensitive to a true balance, owing to dirt accumulation, a water flow in rainy seasons and lodgment of fine coal in the scale pit. I am pleased to report the fairness of all mine owners in my district, in offering every facility to secure to the miners and all parties concerned, honest and just weight.

I have tested forty-one (41) scales in use at as many mines in this district during my service and condemned eighteen (18) of such number, as incapable of giving true weight. In this service I have had an opportunity of studying the disposition of all parties concerned, to be fair and avoid strikes and trouble. The influence of the joint movement was strongly in evidence and to the miners' officers and the operators' commissioner I desire to return my thanks for courtesies shown me in the performance of my duties as a state mine inspector.

WARREN COUNTY.

There are ten mines in this county, nearly all of local character, commonly known as country banks. The coal worked ranges from two feet six inches to three feet six inches in thickness, only one mine having direct railroad shipping connection, hence the production of coal is largely for local use. The mine ventilation is good, four mines using fans, the others having the old furnace method. The hoisting is done entirely with horses on the gin-power principle.

One non-fatal accident occurred in this county during the biennial period. The county produced 41,700 tons of coal and employed ninety men and boys.

MARION COUNTY.

This county, with a record for a large coal production in the past, now promises to figure at the top of the list for large mines, and a large coal tonnage.

The south half of this county seems to be underlaid with a vein of coal ranging in thickness from five feet to thirteen feet. One of the veteran coal operators of the county, Mr. J. A. Powers, formerly of the O. K. coal company, is the pioneer prospector of these large coal deposits and leads in the development. He has opened one shaft and three slopes, all machinery and equipment being of the most improved character. These mines are located some six miles northwest of Bussey and have connections with the Wabash railroad from Tracey, a track running along Cedar Creek, between the hills for about seven miles.

These mines are operated under the very appropriate name of The Manmouth Vein Coal company, which organization has succeeded to the title and properties of the O. K. Coal company, Mr. Powers being continued as the president and general manager, while Mr. A. E. Hollingsworth is secretary, with general offices at Des Moines.

There were three fatal accidents and twelve non-fatal accidents occurred in this county during the past two years. At present there are 575 miners and other employes working in this county. The difficulty now being to find houses for the people coming to these fields; work and wage earnings in this large coal, offering special advantages and inducements. The coal production for the two years is 596,917 tons.

Mr. William Phillips, of Oskaloosa, a life-long coal man, opened up a large mine at Flagler, along the Rock Island railroad, which promised to be a good paying coal producing property. Much money was spent in this development, but the fates of misfortune followed, and Mr. Phillips was obliged to abandon the mine with heavy loss.

The Knoxville Coal company, operating in the vicinity of Flagler, promises much for the coal production of Marion county. Mr. Harry Booth, an old pioneer coal man, is in control of this property. Connections are being made with the Chicago, Burlington and Quincy railroad, and a sort of mining revival is promised in the Flagler vicinity. Mr. Booth has five feet six inches of good coal and a sound roof, which is essential to successful mining.

The Southeastern Coal company has opened, by shaft, a new mine at Hamilton, but at this writing have not succeeded in making any railroad connection. The mine is over 200 feet deep; the coal is five feet six inches thick. The top works and machinery equipment are of the best for a large volume of business; but little progress seems to be made for railroad connection and shipment, consequently there are but few hands employed and little business done.

The mines are all new and the production will, I predict, be astonishingly large during the next two years.

MAHASKA COUNTY.

There are twenty-six mines in this county, worked on the room and pillar plan, employing in the aggregate 1,382 miners and other workmen. The production for the past two years is 1,413,711 tons. It has been known for many years as first in coal production, but is fast fading in prominence to the fields of other counties. There were, however, several large new mines opened since the last coal report, located on an extension of the Chicago & Northwestern R. R., Buxton branch, making neighboring coal properties to Mr. Buxton's large mines. Pioneer coal men from What Cheer district have opened new mines under the names of Creston coal company, and the Rex coal company respectively. Large investments have been made by these people. The mine machinery and equipment is of the most modern kinds and a very large coal tonnage is looked for. Each company has a large coal area and have made by prospecting a very thorough canvass of the coal resources of the territory controlled.

The coal field borders on the east of the large coal deposits of Marion county and report an equally thick coal with that operated by the Manmouth Vein Coal Company.

There has been opened a new mine at Colon, operated by the Morrow Coal company, of Oskaloosa. A shaft 128 feet deep has been sunk and the coal is four feet six inches thick. There is good top works and fair equipment. Seventy-eight men are employed, producing about 250 tons per day.

The Spring Creek Coal company, succeeding to the coal properties of the Smith Bros. mine, located five miles northeast of Oskaloosa, have changed the enterprise from a small gin-pit to a steam power railroad shipping mine, and a largely increased tonnage is sure to result from this change.

A number of small mines continue to produce coal in this county, and such will be in evidence for many years to come. There was twenty-five fatal and twenty-five non-fatal accidents reported for the two years.

KEOKUK COUNTY.

This county, including the once far famed mining district of What Cheer, and retaining for years a place with the largest coal producing counties of the state, is fast fading from the roll, and unless some of the many prospectors now at work find better than their present labors indicate, the district of What Cheer and the county of Keokuk is doomed to insignificance in coal mining affairs. There will continue to be several small or country coal banks that can easily be relied upon to supply coal enough for local requirements.

The tonnage report for the two years is 221,412 tons. The number of miners 226. Five fatal and three non-fatal accidents have occurred.

WAFELLO COUNTY.

This county employed during the past two years 765 miners and other workmen.

The tonnage reported to this office is 684,094 tons for the two years.

The county still retains its position as a large coal producer and promises to continue prominent in coal production for years to come. The following companies have opened new mines: The Anchor Coal company, a shaft at Laddsdale. The Phillips Fuel company of Ottumwa, a shaft west of their old No. 4 mine, now abandoned, and the Ottumwa Brick and Construction company, a shaft south of the Roseland Coal company, near Ottumwa. These new enterprises are equipped with modern machinery and are capable of handling a large tonnage.

There are several mines in South Ottumwa that have no railroad shipping facilities and furnish the local market. This local business has grown to large proportions and is constantly increasing. To meet such requirements the local mines have made much needed improvements.

Accidents for two years: Three fatal and twelve non-fatal.

VAN BUREN COUNTY.

This county, which is in the southeastern part of the second district, as now comprised, has been producing coal for many years. There are several mines in operation, furnishing employment to seventy-two men and has produced 35,456 tons of coal during the two years reported for.

The coal is of uniform thickness from three feet to three feet six inches, and is reached by shaft at a depth of from fifty to eighty-five feet. All of these mines are situated along the Rock Island road, near the towns of Doud Station and Farmington. The greater portion of the output of coal is consumed locally in the towns named. Ventilation is principally by furnace and like Davis and Jefferson counties is ample for all the requirements.

JEFFERSON COUNTY.

This county is a small producer of coal, having but four small mines and all are country banks located in the vicinity of Fairfield. Employment is furnished to twenty-eight men throughout the fall and winter season. The production reported is 8,785 tons. The coal commands a very good price in the home market. Ventilation is by furnace.

DAVIS COUNTY.

There are four mines located in this county in the vicinity of Eldon. Three of them are drift openings and one a shaft, furnishing employment during the last biennial period to sixteen men. The coal production is 7,050 tons. None of the mines in this county have railroad facilities for shipping and have therefore to depend entirely upon the local market for business. The means of ventilation is by furnace and natural, which seems sufficient.

CONCLUSION

After an experience of sixteen years working in the coal mines of Pennsylvania and Iowa, both in anthracite and bituminous coal, coming from family and social associations of mining life, I naturally took up the duties of a state mine inspector with no small degree of concern and anxiety that my services might be for the greatest possible good to miners and operators. With all possible respect for the capital invested in the coal mining business, I made paramount my object to secure the fullest measure of safeguard for the lives and health of those employed in and about the coal mines of the second district. I pride myself in having secured much improvement in various directions.

Large fans with a permanent capacity for a large volume of air have succeeded in several places the old fan which had scarcely force beyond the requirements of the ordinary or country mine kind. Improvement to air shafts; proper and solid air-tight closing of old crosscuts and headings, good doors and brattices have been installed; that air might travel in sufficient volume to the working places (face) of our miners, driving in rapid force, in the return columns, the poisoned and smoke-laden air, to prevent gas accumulations which fortunately is seldom found in Iowa mines. I work for good air and good ventilation, realizing the truth of the maxim, that "an ounce of prevention is better than a pound of cure."

As to powder, gas or dust explosions: I regard it only necessary for our miners and shooters to exercise care and caution to avert such accidents, so shocking in our mining life, and in this period of modern mining methods; conceding all merit that there may be in the scientific or theoretic recommendations of non-practical men; the remedy is entirely within the province of our laws and the sensible disposition of the mine people to comply with the requirements of the law and the rules laid down to govern, care in handling explosives, judgment in placing shots, and the abandonment of all unreasonably large blasts, careful propping of all working places, the careful timbering of entries and travel ways, bad entries being especially dangerous to drivers hauling coal. A bad joint of rail might cause a car to jump the track, knock out a prop or set of timbers that would cause a fall of rock upon a driver, crushing him to eternity or crippling him for life. In every mine it should be made a rule not to tolerate the presence of heavy smoke along haul-ways or regular traveling gangways.

The co-operation of mine owners, especially between the pit boss and the pit committee on these points, for good air and well timbered gangways, entries and working places and the character of blasts to be made, will mitigate, if not entirely wipe out, accidents and death in our coal mines. I make those recommendations and invite the joint efforts of miners and operators to the same end.

TABLE No. 1.

Showing number of mines, output of coal, number of miners and other employes in District No. 2 for year ending June 30, 1902.

NAME OF COUNTY.	Number of mines.	Total amount of coal produced.	Number of miners.	Number of other employes.	Average number of days worked.
Mahaska.....	28	754,885	982	438	202
Wapello.....	13	818,929	414	214	234
Marion.....	18	308,042	500	147	179
Keokuk.....	15	133,880	248	78	190
Warren.....	0	21,481	60	19	188
Van Buren.....	7	16,718	42	15	208
Jefferson.....	4	4,785	22	6	120
Davis.....	4	8,350	18	4	120
Total.....	97	1,542,519	2,266	921	.....

TABLE No. 2.

Showing number of mines, output of coal, number of miners and other employes in District No. 2 for year ending June 30, 1903.

NAME OF COUNTY.	Number of mines.	Total amount of coal produced.	Number of miners.	Number of other employes.	Average number of days worked.
Mahaska.....	26	678,826	929	458	188
Wapello.....	18	365,165	506	259	255
Marion.....	18	295,875	400	175	202
Keokuk.....	15	82,632	158	70	174
Warren.....	10	20,205	66	25	190
Van Buren.....	7	18,740	52	20	142
Jefferson.....	4	4,000	15	3	120
Davis.....	4	3,200	12	4	124
Total.....	97	1,460,603	2,183	1,009	.....

LIST OF COMPANIES, SUPERINTENDENTS, ETC., IN SECOND DISTRICT.

MAHASKA COUNTY.

NAME OF COMPANY.	SUPERINTENDENT.	POST OFFICE ADDRESS.	SHAFT OR SLOPE.	PLAN OF WORKING.	HOW VENTILATED.	POWER USED.	SHIPPING OR LOCAL.
Consolidation Coal Company No. 9	B. C. Burton	Burton	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Lost Creek Coal Company No. 2	J. Trimble	Lost Creek	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Regal Coal company	Dan Regal	Oakaloosa	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Whitebreast Fuel Company No. 28.	Evans Reese	Pekay	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Garfield Coal Company No. 7	J. H. Reese	Oakaloosa	Shaft.	Room and pillar.	Fan	Steam	Shipping.
American Coal Company No. 7	W. T. Phillips	Evans	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Oakaloosa Coal and Mining company.	John Reimsay	Evans	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Eveland Coal company	John Price	Eveland	Shaft.	Room and pillar.	Fan	Steam	Shipping.
McC Fuel company	C. Durre	McC	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Morrow Coal company	George Morrow	Oakaloosa	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Black Diamond Coal company	George Carlson	Oakaloosa	Slope.	Room and pillar.	Fan	Steam	Shipping.
Crescent Coal company	James Chas	White City	Slope.	Room and pillar.	Fan	Steam	Shipping.
Spring Creek Coal company	J. H. Smith	Oakaloosa	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Bur Oak Coal company	W. T. Phillips	Oakaloosa	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Corryell & Sons Coal company	F. D. Corryell	Oliver	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Kennel Coal company	A. Love	Madville	Slope.	Room and pillar.	Furnace	Horse	Local.
Alwood Coal company	Jno. Reynolds	Alwood	Slope.	Room and pillar.	Furnace	Horse	Local.
Barreton & Oakley Coal company	R. Barreton	Oakaloosa	Slope.	Room and pillar.	Furnace	Horse	Local.
Schultz Coal company.	R. Schultz	Oakaloosa	Slope.	Room and pillar.	Natural	Horse	Local.
Williams Coal company.	Mr. F. Williams	Oakaloosa	Slope.	Room and pillar.	Furnace	Horse	Local.
Willmes Coal company.	Wm. F. Williams	New Sharon	Slope.	Room and pillar.	Fan	Steam	Local.
Carroll Coal company	M. Carey	Rose Hill	Slope.	Room and pillar.	Furnace	Horse	Local.
Carroll Coal company	A. B. Little	Oakaloosa	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Sowden Coal company	J. H. Sowden	Oakaloosa	Shaft.	Room and pillar.	Furnace	Horse	Local.
Patterson & Son Coal company	Wm. Patterson	Leighton	Shaft.	Room and pillar.	Furnace	Horse	Local.
Frer Bros. Coal company.		Leighton	Shaft.	Room and pillar.	Furnace	Horse	Local.

WARREN COUNTY.

D. Uttersen Coal company.	Wm. Smith.	Carlisle	Shaft.	Long wall	Furnace.	Horse	Local.
Shackley & Bennum Coal company.	B. B. Bennum.	Somerseset	Shaft.	Long wall	Fan	Horse	Local.
Welch Coal company.	J. E. Welch.	Somerseset	Shaft.	Long wall	Fan	Horse	Local.
Somerseset Coal company.	R. W. Earle.	Somerseset	Shaft.	Room and pillar.	Fan	Horse	Shipping.
Cassady & Turnipspeed Coal company.	Wm. Turnipspeed.	Somerseset	Shaft.	Room and pillar.	Fan	Horse	Local.
Bales Coal company.	N. D. Bales.	Milo	Shaft.	Room and pillar.	Furnace.	Horse	Local.
Bryant Coal company.	S. O. Bryant.	Milo	Shaft.	Room and pillar.	Furnace.	Horse	Local.
Williams Coal company.	J. A. Williams.	Liberty Center	Shaft.	Room and pillar.	Furnace.	Horse	Local.
Rowley Coal company.	E. Rowley.	Carlisle	Shaft.	Room and pillar.	Furnace.	Horse	Local.
Barber & Perkins Coal company.	J. T. Barber.	Carlisle	Shaft.	Room and pillar.	Furnace.	Horse	Local.

KEOKUK COUNTY.

Margaret Coal company.	Jno. Donovan.	What Cheer.	Shaft.	Room and pillar.	Fan	Steam.	Shipping.
What Cheer Fuel company.	H. D. Baker.	What Cheer.	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Volunteer Coal company.	Thos. Thompson.	What Cheer.	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Grundings Bros. Coal company.	Dan Grundings.	What Cheer.	Shaft.	Room and pillar.	Natural	Horse	Local.
Maxwell Coal company.	Robt. Maxwell.	What Cheer.	Shaft.	Room and pillar.	Natural	Horse	Local.
Graham & Dixon Coal company.	David Graham.	What Cheer.	Shaft.	Room and pillar.	Natural	Horse	Local.
Lambert Bros. Coal company.	Ed Spavin.	What Cheer.	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Bell & Teeters Coal company.		Delta	Shaft.	Room and pillar.	Furnace.	Horse	Local.
O. W. Oliver Coal company.	O. W. Olive.	Delta	Shaft.	Room and pillar.	Furnace.	Horse	Local.
M. Fisher Coal company.	Martin Fisher.	Delta	Shaft.	Room and pillar.	Furnace.	Horse	Local.
H. Murray Coal company.	H. Murray.	What Cheer.	Shaft.	Room and pillar.	Furnace	Horse	Local.

VAN BUREN COUNTY.

Bateliff Coal Company No. 1.	H. L. Bateliff.	Donds	Shaft.	Room and pillar.	Furnace.	Horse	Shipping.
Bateliff Coal Company No. 2.	H. L. Bateliff.	Donds	Shaft.	Room and pillar.	Furnace	Horse	Shipping.
Finley Coal company.	J. A. Finley.	Donds	Shaft.	Room and pillar.	Furnace	Horse	Shipping.
Henry Knott Coal company.	H. Knott.	Farmington	Shaft.	Room and pillar.	Furnace.	Horse	Shipping.
Sherflet & Alfrey Coal company.	O. S. Alfrey.	Farmington	Shaft.	Room and pillar.	Furnace.	Horse	Shipping.
Cahill Coal company.	P. Cahill.	Farmington	Shaft.	Room and pillar.	Furnace.	Horse	Local.
Carson Coal company.	Wm. Carson.	Donds	Shaft.	Room and pillar.	Furnace.	Horse	Shipping.

WAPELLO COUNTY.

Phillips Fuel Company No. 5.	A. J. E-skins.	Ottumwa	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Anchor Coal company.	W. B. Williams.	Ledd-dale	Shaft.	Room and pillar.	Fan	Steam	Shipping.

WAPELLO COUNTY—CONTINUED.

NAME OF COMPANY.	SUPERINTENDENT.	POST OFFICE ADDRESS.	SHAFT OR SLOPE.	PLAN OF WORKING.	HOW VENTILATED.	POWER USED.	SHIPPING OR LOCAL.
Carbon Coal company.....	L. L. Lodwick	Willard.	Shaft.....	Room and pillar.	Fan.....	Steam.....	Shipping.
Bear Creek Coal company.....	Jacob Allen	Bear Creek	Slope.....	Room and pillar.	Fan.....	Steam.....	Shipping.
South Ottumwa Coal company.....	G. W. Grooms	Ottumwa	Slope.....	Room and pillar.	Fan.....	Horse.....	Local.
Star Coal company.....	Wm. Dempster	Ottumwa	Slope.....	Room and pillar.	Fan.....	Steam.....	Local.
Spring Hill Coal company.....	Chas. Olson	Ottumwa	Shaft.....	Room and pillar.	Furnace.....	Horse.....	Local.
Excel-for Coal company.....	E. G. Stryer	Ottumwa	Shaft.....	Room and pillar.	Fan.....	Horse.....	Local.
Robber Coal company.....	R. R. Risher	Ottumwa	Shaft.....	Room and pillar.	Fan.....	Steam.....	Local.
Illinois and Iowa Fuel company.....	Jas. Shevlin	Yeb.....	Shaft.....	Room and pillar.	Fan.....	Steam.....	Shipping.
Reedland Coal company.....	A. D. Lumsden	Ottumwa	Shaft.....	Room and pillar.	Fan.....	Steam.....	Shipping.
Brown Brothers Coal company.....	C. W. Brown	Yeb.....	Shaft.....	Room and pillar.	Fan.....	Steam.....	Local.
John Daniels Coal company.....	Jno. Daniels	Ottumwa	Shaft.....	Room and pillar.	Furnace.....	Horse.....	Local.

JEFFERSON COUNTY.

Wm. Hull Coal company.....	William Hull	Fairfield	Shaft.....	Room and pillar.	Furnace.....	Horse.....	Local.
Bates Coal company.....	G. W. Bates	Fairfield	Shaft.....	Room and pillar.	Furnace.....	Horse.....	Local.
Gardner Coal company.....	A. Gardner	Fairfield	Shaft.....	Room and pillar.	Furnace.....	Horse.....	Local.
Tweedy Coal company.....	J. Tweedy	Libertyville	Shaft.....	Room and pillar.	Natural.....	Horse.....	Local.

MARION COUNTY.

Buwalda Bros. Coal company.....	J. Buwalda	Pella.....	Shaft.....	Room and pillar.	Steam jet.....	Steam.....	Local.
Diehlman Coal company.....	J. R. Diehlman	Pella.....	Slope.....	Room and pillar.	Natural.....	Steam.....	Local.
Hollingsworth Coal company.....	E. Hollingsworth	Otley.....	Slope.....	Room and pillar.	Furnace.....	Horse.....	Local.
Yonkton Coal company.....	J. B. Mezlar	Otley.....	Slope.....	Room and pillar.	Furnace.....	Horse.....	Local.
Wild Rose Coal and Mining company.....	G. W. Rupe	Morgan Valley	Shaft.....	Room and pillar.	Fan.....	Steam.....	Shipping.
Dunreath Coal company.....	W. W. Sulley	Dunreath	Shaft.....	Room and pillar.	Fan.....	Horse.....	Shipping.
Booth Coal company.....	H. Booth	Knoxville	Slope.....	Room and pillar.	Natural.....	Horse.....	Shipping.
Hayes Coal company.....	J. T. Hayes	Knoxville	Slope.....	Room and pillar.	Furnace.....	Horse.....	Shipping.
Hawkeye Coal company.....	L. E. Phillips	Knoxville	Shaft.....	Room and pillar.	Fan.....	Steam.....	Shipping.
Manmouth Coal company.....	J. A. J. Powers	Hamilton	Shaft.....	Room and pillar.	Fan.....	Steam.....	Shipping.
Southeastern and Iowa Fuel company.....	R. D. Adey	Hamilton	Shaft.....	Room and pillar.	Fan.....	Steam.....	Shipping.

Miller Coal company.....	Wm. Miller.....	Knoxville.....	Slope.....	Room and pillar.....	Furnace.....	Horse.....	Shipping.....
Cedar Creek Coal company.....	J. T. Jones.....	Hamilton.....	Shaft.....	Room and pillar.....	Fan.....	Steam.....	Shipping.....
Price Coal company.....	J. R. Price.....	Osley.....	Slope.....	Room and pillar.....	Furnace.....	Horse.....	Shipping.....

DAVIS COUNTY.

Sickle Coal company.....	J. M. Sickle.....	Eldon.....	Slope.....	Room and pillar.....	Furnace.....	Horse.....	Local.....
Dye Coal company.....	G. W. Dye.....	Eldon.....	Slope.....	Room and pillar.....	Furnace.....	Horse.....	Local.....
Jordon Coal company.....	John Jordon.....	Eldon.....	Slope.....	Room and pillar.....	Furnace.....	Horse.....	Local.....
Lunsford Coal company.....	A. C. Lunsford.....	Lun-ford.....	Shaft.....	Room and pillar.....	Furnace.....	Horse.....	Local.....

Fatal accidents in District No. 2, for two years ending June 30, 1903.

DATE.	NAME.	OCCUPATION.	CAUSE OF DEATH.	MINE WHERE ACCIDENT OCCURRED.	COUNTY.
August 24, 1901	James Glass	Miner	Fall of slate.	American	Mahaska.
October 9, 1901	William Golightly	Miner	Fall of coal.	Garfield	Mahaska.
October 28, 1901	William Demoss	Miner	Fall of slate	J. P. Price.	Marion.
December 27, 1901	John James	Miner	Fall of slate	American	Mahaska.
January 24, 1902	Ben Leclain.	Shotfirer.	Fall of slate.	Columbia	Keokuk.
January 24, 1902	John Orson.	Miner	Flying coal.	O. K. No. 5	Marion.
January 24, 1902	Michael Fox, Sr.	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	Michael Fox, Jr.	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	Russell Fish.	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	Daniel Fish.	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	John Elder	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	C. Crew.	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	Samuel Humphrey	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	David Walters	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	John Scovall.	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	S. C. Grayton.	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	John Martin.	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	John Kwall.	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	Geo. Pash.	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	Geo. Pashok.	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	Alex. Gray	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	John McNealey	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	Joe Humphrey	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	Frank Campbell	Miner	Explosion.	Lost Creek.	Mahaska.
January 24, 1902	John Bart	Miner	Explosion.	Lost Creek.	Mahaska.
January 25, 1902	Lancelot Walker	Miner foreman.	Caught between cage and shaft.	Aywood	Mahaska.
January 27, 1902	John B. Leclair	Miner	Fall of slate.	Columbian	Keokuk.
January 28, 1902	John Leclair.	Miner	Fall of slate	Columbian	Keokuk.
January 28, 1902	Samuel D. Cooper.	Miner	Fall of slate	Roseland	Wapello.
March 22, 1902	Geo. Howard	Driver	Fall of slate	Lambert	Keokuk.
April 27, 1902	Dave Mesely	Miner	Fall of slate.	Garfield	Mahaska.
September 29, 1902	Nathan Hollingsworth.	Driver	Fall of slate.	John-on & Hollingsworth.	Marion.
January 12, 1903	James Baxter	Driver	round under car.	Anchor	Wapello.
March 14, 1903	W. J. Overstake	Miner	Fall of slate.	Illinois & Iowa.	Wapello.
June 4, 1903	Robt. Maxwell, Jr.	Top man	Fell down shaft	Maxwell.	Keokuk.

Non-fatal accidents in District No. 2 for two years ending June 30, 1903.

DATE.	NAME.	OCCUPATION.	CHARACTER OF INJURY.	CAUSE OF ACCIDENT.	MINE WHERE ACCIDENT OCCURRED.	COUNTY.
July 30, 1901	Robert Hooking.	Miner	Rib fractured.	Fall of slate.	American	Mahaska.
August 6, 1901	Peter Ennis.	Mine foreman.	Collar bone broken.	Fall of slate.	Ennis & Co.	Marion.
August 17, 1901	John Dusk.	Driver	Bruised.	Fell under car.	American	Mahaska.
August 19, 1901	J. A. S. Reeves.	Miner.	Leg broken.	Fall of slate.	O. K. No. 5.	Mahaska.
October 10, 1901	Hugh Cassidy.	Cager.	Left arm broken.	Coal falling down shaft.	O. K. No. 5.	Marion.
December 8, 1901	J. B. Skelton.	Driver	Collar bone broken.	Caught between car and rib.	O. K. No. 5.	Marion.
January 3, 1902	Garret Root-seller.	Miner.	Leg broken.	Fall of slate.	J. R. Price.	Marion.
January 6, 1902	William Green.	Miner.	Back injured.	Fall of slate.	Illinois & Iowa.	Wapello.
January 13, 1902	William Flemming.	Miner.	Back injured.	Fall of slate.	Illinois & Iowa.	Wapello.
January 18, 1902	Brice Gibb.	Miner.	Leg injured.	Fall of coal.	Illinois & Iowa.	Wapello.
January 24, 1902	John Jurkin.	Cager.	Burned.	Explosion.	Lost Creek	Mahaska.
January 24, 1902	Geo. Gogo.	Miner.	Lungs affected by altar damp.	Explosion.	Lost Creek	Mahaska.
January 24, 1902	Jonas Mable.	Driver.	Leg broken.	Explosion.	Lost Creek	Mahaska.
January 24, 1902	Oliver Mable.	Trapper.	Arm broken.	Explosion.	Lost Creek	Mahaska.
January 24, 1902	Chas. Lannan.	Driver.	Burned.	Explosion.	Lost Creek	Mahaska.
January 24, 1902	Frank Secores.	Miner.	Arm broken.	Explosion.	Lost Creek	Mahaska.
January 24, 1902	Ed. Swanson.	Driver.	Back injured.	Explosion.	Lost Creek	Mahaska.
January 24, 1902	William Booth.	Trapper.	Burned.	Explosion.	Lost Creek	Mahaska.
January 24, 1902	Wm. Fothergill, Jr.	Trapper.	Burned.	Explosion.	Lost Creek	Mahaska.
January 24, 1902	Geo. Fothergill, Jr.	Driver.	Burned.	Explosion.	Lost Creek	Mahaska.
January 24, 1902	Mat Adair, Jr.	Trapper.	Burned.	Explosion.	Lost Creek	Mahaska.
January 24, 1902	William Harvey.	Miner.	Lungs affected by altar damp.	Explosion.	Lost Creek	Mahaska.
January 24, 1902	Harry Barrock.	Driver.	Burned.	Explosion.	Lost Creek	Mahaska.
January 24, 1902	Asa Sullivan.	Dumper.	Burned.	Explosion.	Lost Creek	Mahaska.
January 31, 1902	Jas. Muller.	Miner.	Back injured.	Fall of slate.	Illinois & Iowa.	Wapello.
February 4, 1902	Pete Casceden.	Miner.	Scalp wound.	Flying coal.	American	Mahaska.
February 6, 1902	William Glenn.	Miner.	Rib-fractured.	Fall of slate.	O. K. No. 5.	Marion.
February 10, 1902	John Holiday, Sr.	Miner.	Foot broken.	Fall of slate.	O. K. No. 5.	Marion.
February 23, 1902	Sam Reaser.	Driver.	Leg broken.	Caught between car and rib.	O. K. No. 5.	Marion.
March 6, 1902	Gus Carlson.	Driver.	Leg broken.	Fall of slate.	Garfield.	Mahaska.
March 27, 1902	John Tolover, Jr.	Miner.	Leg broken.	Fall of slate.	Consolidation No. 9	Mahaska.
April 28, 1902	Thos. Harding.	Miner.	Hand washed.	Fall of slate.	Lambert	Mahaska.
May 20, 1902	Wm. Davis.	Driver.	Cut on head and hand.	Fall of slate.	Everland	Mahaska.
June 15, 1902	Yves Costa.	Miner.	Head cut.	Fall of slate.	Everland	Mahaska.
September 20, 1902	David Jenkins.	Track layer.	Amputation of finger.	Run over by car.	Bear Creek	Wapello.
September 23, 1902	William Nicholson.	Trapper.	Hip crushed.	Illinois & Iowa.	Illinois & Iowa.	Wapello.
November 8, 1902	Jas. Graham.	Miner.	Concussion of brain.	Fall of slate.	Carbon.	Wapello.
September 27, 1902	Ethan Porter.	Miner.	Concussion of brain.	Flying coal.	Consolidation No. 9	Mahaska.
November 18, 1902	P. B. Thor.	Miner.	Scalp wound.	Fall of slate.	Lost Creek	Mahaska.

NON-FATAL ACCIDENTS IN DISTRICT NO. 2 FOR TWO YEARS ENDING JUNE 30, 1908—CONTINUED.

DATE.	NAME.	OCCUPATION.	CHARACTER OF INJURY.	CAUSE OF ACCIDENT	MINE WHERE ACCIDENT OCCURRED.	COUNTY.
November 30, 1902	A. Mercer	Miner	Back and leg injured	Fall of slate	Somerset	Warren.
November 29, 1902	Thos. Simpson, Jr.	Driver	Limbs injured	Car turned over	Illinois & Iowa	Wapello.
December 29, 1902	Geo. Lord	Driver	Leg broken	Caught by car	Roseland	Wapello.
January 7, 1903	Chas. Peterson	Miner	Right hand injured	Fall of slate	Illinois & Iowa	Wapello.
January 12, 1903	Christ Nelson	Driver	Leg broken	Fall of slate	O. K. No. 5	Marion.
February 1, 1903	Jas. Cowan	Driver	Collar bone broken	Caught between car and post	Marquette	Keokuk.
February 20, 1903	W. M. Daniels	Miner	Arm broken	Loose board on cage	Morrow	Marion.
February 28, 1903	Jas. Clarkson	Miner	Brui sed	Fall of slate	O. K. No. 5	Marion.
February 12, 1903	Wm. Little	Miner	Back hurt	Fall of slate	O. K. No. 5	Marion.
March 1, 1903	Wm. Bishop	Miner	Shoulder hurt	Fall of coal	Phillips	Wapello.
May 1, 1903	Clarence Howard	Miner	Leg broken	Caught between car and rib		
June 11, 1903	Francis Chambers	Driver	Leg broken, spinal column dislocated and internal injuries	Caught between cars	Consolidation No. 9	Maahaska.

THIRD DISTRICT.

LETTER OF TRANSMITTAL.

TO THE HON. A. B. CUMMINS, Governor of Iowa.

Sir,—I have the honor to submit herewith the biennial report, ending June 30, 1903, for the Third Mine Inspection District.

Respectfully,

J. W. MILLER.

THIRD DISTRICT.

With one exception the third inspection district remains the same as during the biennial period ending June 30, 1899. Adair County has been placed in the second district and Scott County, formerly in the second district, has been placed in the third district.

The third district is now composed of the following counties: Polk, Jasper, Boone, Webster, Greene, Dallas, Guthrie, Story and Scott.

POLK COUNTY.

This county is located near the central part of the coal field of Iowa and has for a number of years been one among the largest coal producing counties in the state. While coal has been mined in this county for a number of years, each year finds new companies in the field opening up and equipping mines. The local trade being very good in this county, owing to Des Moines, the capital of the state, being located here, there are a number of local mines located in and around Des Moines. These local mines do very little work during the summer months, but during the winter season produce quite a large tonnage and give employment to several hundred men.

The mines located on the various railroads in the county, as a rule, work a greater part of the time during the summer as well as during the winter months.

North of Des Moines and within three miles of the city limits are two large, modern equipped mines, located on spurs from the C. & N.-W. R. R. known as the Saylor Coal company's mine and the Des Moines Coal company's mine. The Saylor Coal company's main shaft, located at Saylorville, is 225 feet deep. The employees in and around the mine average 253. The vein of coal at this mine is from four to five feet in thickness. The Des Moines Coal company's main shaft, located at Marquisville, is 225 feet deep. The vein is from four to six feet thick. About 254 men are employed in and

around this mine. This company is sinking a shaft near Enterprise and expect to open out and equip a mine as rapidly as possible. This mine will be located on the D. M., I. F. & N. R. R.

Northeast of Des Moines and on a switch of the C. G. W. R. R. is located the mine of the Maple Grove Coal company. This company employs about sixty men in and around its mine. The main shaft is 105 feet deep. The vein is about five feet in thickness.

East and north of the Maple Grove Coal company's mine and on the same railroad is located the Norwood Coal company's mine. The main shaft of this mine is 215 feet deep. The vein is from four to five feet in thickness. About 175 men are employed in and around this mine. This company has opened and equipped their mine No. 2, which is located about two miles east of Valley Junction and on the Milwaukee railroad.

The mine known as the Great Western or Highland mine was bought and operated a portion of last winter by the Woodin Coal company. On account of the mine being too expensive to operate it was abandoned in February of this year.

The Gibson Coal company's mine No. 3 that was located east of Des Moines has been abandoned. The company has opened and equipped mine No. 4, two miles west of Altoona and on the C. R. I. & P. R. R. The main shaft is 190 feet deep. The vein is from four to five feet thick. About 100 men are employed at this mine and it promises to be one of the largest producers in the county.

The Smith-Lowe Coal company is operating their mines Nos. 2 and 3 at Carbondale, about five miles southeast of Des Moines. These mines are located on the C., R. I. & P. R. R. Mine No. 4 is being opened and equipped. This company employs about 280 men in and around their mines. The vein of coal is from four to five feet in thickness.

The Christy Coal company's mine that was operated for several years at Youngstown, four and one-half miles east of Des Moines, has been abandoned.

The Co-operative Coal company has abandoned their mine which they formerly operated near Lake Park in Des Moines.

The Bloomfield Coal company's mine north of Des Moines does a very large local business. Their main shaft is 102 feet deep. The vein is about five feet in thickness. During the winter months they employ about 150 men. They do some shipping, the coal being hauled by team to the cars.

Northwest of Des Moines is located the Keystone Coal company's mine, the Eagle Coal company's mine, Center Coal company's mine and the West Riverside Coal company's mine. The vein of coal worked by these companies is about five feet in thickness. While some coal is loaded on cars from these mines, the greater part is sold to local consumers. During the winter season they employ from forty to 100 men each. Near the Eagle Coal company's mine the Madison Coal company has recently opened out and equipped a mine for local trade.

The Glenwood Coal company is operating a mine just north of the state fair ground. The mine was opened and equipped last winter. They expect to supply quite a large local trade.

The Capital Coal company, a new company, has opened and equipped a mine in South Des Moines and are preparing to do a large local business this fall and winter.

The Midway Coal company is operating a mine five miles southwest of Des Moines. They employ about sixty men. The vein is from four and one-half to five feet in thickness. The depth of their main shaft is 120 feet.

The Flint Brick and Coal company operate a mine in the northwest part of Des Moines. They employ about thirty men. They consume the greater part of their output in connection with their brick yard. During the winter they supply some local trade.

The Oak Park Coal company's mine, located north of Highland Park, Des Moines, employs about fifty men during the winter months. This company depends mostly on local trade.

The Diamond Joe Coal company is operating a mine one mile north of Runnells. They have in their employ about fifty men. This mine is located on the Wabash railroad. Besides the railroad trade they do considerable local business during the winter months.

Evans Brothers have opened and equipped a new mine five miles northeast of Des Moines.

There are a number of local mines, located in various parts of the county, that work only during the fall and winter. These mines depend exclusively on local or country trade.

JASPER COUNTY.

Coal has been mined in this county for a number of years, and some years ago there was a very good tonnage produced; however, it gradually decreased until there were only a few local mines in the county. In recent years the tonnage has been increasing, and from the drilling that has been done during the past two years it is evident that this county's tonnage will be increased very materially during the next biennial period.

The Jasper County Coal Company and the Colfax Coal and Mining Company are now owned by one company, known as the Colfax Consolidated Coal Company. This company has mines No. 6 and 7, located near Seevers, four miles southeast of Colfax, and on their own line of railroad, which connects with the C., R. I. & P. at Colfax. These mines are well equipped and are doing a large shipping business. They employ in and around these mines about 608 men and boys. The main shaft of mine No. 6 is 130 feet in depth and the vein is from five to six feet in thickness. At mine No. 7 the main shaft is fifty-nine feet deep, and the vein from five to six feet in thickness.

There are four or five local mines located near Newton; six or seven in the vicinity of Colfax and several in other parts of the county. These mines depend entirely on local trade.

SCOTT COUNTY.

This county has a number of mines, none of which produce more than 4,000 tons per year. Coal has been mined in this county for a number of years. The mines have always been local mines with no railroad connec-

tions and the tonnage has never been large. The mines of this county are located within a radius of five miles of Jamestown, which is about nine miles from Davenport. The Long Coal company has abandoned the mine they operated for several years and is now sinking a new main shaft west of Buffalo. At the Carlon and Buchmeyer mines an escape shaft has just been completed. At the Hanlon mine and the Sass Brothers mine escape shafts are in progress of sinking. The coal averages about three feet in thickness and is worked on the room and pillar plan. These mines are not in operation as much during the summer as during the winter months. A large local trade is supplied by the mines during the winter months. Horse power and furnace ventilation are in vogue at these mines.

BOONE COUNTY.

The mines of this county are worked principally on the long wall plan. The vein is from three to four feet in thickness.

The Boone Valley Coal and Railroad company is operating their Nos. 1, 3, 5 and 6 mines within one mile of Fraser. New air and escape shafts have been provided for these mines, except No. 3, during the past year. The escape shaft for No. 3 is now being provided. This company has its own railroad connecting with the M. & St. P. at Fraser Junction and with the C., R. I. & P. at Gowrie. This company is now extending their railway line to Newton, with a view of connecting with the I. C. R. R.

West of Boonesboro is located the Crowe Coal company, Boone County Coal company, Risher Coal company and the W. D. Johnson Coal company. These mines all have connection with the C. & N.-W. R. R.

The Zimbleman Coal company and the Heaps Coal company have sold out.

Benson Brothers have abandoned their shaft.

The W. D. Johnson mine has had considerable trouble with a fire that broke out in their mine October, 19. 1902. They are now sinking a new main shaft at the face of the old workings of the Logan mine, which will enable them to increase their tonnage and reduce the cost of handling the same.

There are several small mines located along the river north of Madrid and across the river southwest of Madrid. These mines are small and do only a local business during the winter months.

WEBSTER COUNTY

Webster county lies the farthest north of any of the coal producing counties of the state.

The Crooked Creek Coal and Railroad company is operating their mine No. 5, two and one half miles south of Lehigh. The depth of the main shaft

is twenty-five feet and the vein is about three and one half feet in thickness. They employ during the summer months about fifty men; during the winter months this number is increased. This company owns its railroad connecting with the C. G. W. at Lehigh and C. N.-W. and I. C. at Webster City.

The Webster County Coal and Land company is not operating a mine in this county now. The Pleasant Valley Coal company and the Gleason Coal company are operating mines east of Coalville. They have railroad connection with the G. W. R. R. The vein of coal is from five to six feet thick at these mines and is worked by the room and pillar method. They employ about fifty-five men each. The Upper Valley Coal company is operating a mine three miles southwest of Lehigh. They expect to begin sinking an air and escape shaft at once, also to equip the mine with steam power, modern improved machinery and railway facilities. One mile nearer Lehigh Samuel McClure is sinking a new shaft. He is also sinking a new shaft four miles south of Lehigh. The Daily Coal company is operating a mine two and one half miles southwest of Lehigh and on the G. W. R. R. The vein is about three and one half feet thick and about eighty feet in depth.

There are several smaller mines that do a local business during the winter months.

DALLAS AND GUTHRIE COUNTIES.

The coal measures being worked by the mines in these counties are about the same. The coal is mined principally by the long wall method.

The Platt Brick and Coal company who have operated a mine in connection with their brickyard for a number of years have abandoned their mine at Van Meter.

Hutchison Brothers are operating a mine two miles west of Dawson in Dallas county. This mine is equipped with steam power and is ventilated by a fan. The thickness of the vein at this mine is about three and one half feet and the depth of the main shaft is eighty feet. Reese Brothers are operating their mines Nos. 1 and 2 five and six miles south of Madrid. These mines are equipped with steam power.

Near Panora, in Guthrie county, there is one or two mines. Along the river between Guthrie Center and five miles above Fansler there is ten or twelve mines. Northwest of Madrid, in Dallas county, there are several local mines. These mines do very little work during the summer months, as they depend entirely on local trade. During the winter season they work steadily and employ quite a number of men. They have no arrangements at any of these mines whereby coal can be stored for fall and winter trade and, at times, during the winter they have difficulty in supplying the local demand.

GREENE COUNTY.

In this county there are six mines in operation. They are located near Angus. The vein being worked is from four to five feet in thickness. Steam power is used at several of these mines and fan ventilation is most prevalent. Some of the coal produced by the mines near Angus is hauled to the cars for shipment; however, they depend more on local trade, which is very good during the fall and winter.

This county has advantages in shipping to the northern markets that should be quite an inducement for a shipping mine. Several new shafts are being put down southwest of Angus.

The Goodwin Coal company at Grand Junction is doing very little at present, but expect to start up again soon. They operate in connection with their mine a brickyard, and consume a great deal of their own coal.

SCALES.

Sixty-five tests of scales were made during the last biennial period. When scales were found deficient and condemned the companies, with few exceptions, were ready and willing to have them adjusted as soon as possible.

SHOT EXAMINERS.

In compliance with the shot examiners' law, passed by the Twenty-ninth General Assembly, shot examiners have been certified to and employed at all mines where coal is blasted.

One hundred and forty-five men have been certified to as being competent to act in the capacity of shot examiners in this district. With two or three exceptions these examiners have performed their work in a satisfactory and agreeable manner. When it has been demonstrated that an examiner was negligent or careless in the performance of his work his name has been immediately taken off the list.

In some of the mines in this district shot firers are employed to fire the shots after they are examined, the shot examiner, as a rule, also acting as shot firer.

LIST OF COMPANIES, SUPERINTENDENTS, ETC., IN THIRD DISTRICT.

POLK COUNTY.

NAME OF COMPANY.	SUPERINTENDENT.	POST OFFICE ADDRESS.	SHAFT OR SLOPE.	PLAN OF WORKING.	HOW VENTILATED.	POWER USED.	SHIPPING OR LOCAL.
Des Moines Coal company	Chas. Morris	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Saylor Coal company	Thos. Carpenter	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Smith-Lowe Coal Company No. 2	E. C. Smith	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Smith-Lowe Coal Company No. 3	E. C. Smith	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Smith-Lowe Coal Company No. 4	E. C. Smith	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Norwood Coal Company No. 1	Jos. Norwood	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Norwood Coal Company No. 2	Jos. Norwood	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Gibson Coal Company No. 4	John Gibson	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Maple Grove Coal company	Charles Swanson	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Bloomfield Coal company	George Yarn	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Diamond Joe Coal company	John Shuler	Runnells	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Eagle Coal company	E. M. Gray	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
West Riverside Coal company	G. M. Holmes	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Flint Brick and Coal company	Charles Carlson	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Center Coal company	Joe Jackson	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Oak Park Coal company	Mike Quian	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
O. K. Coal company	Edward Herdman	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Glenwood Coal company	Chas. Beck	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Capital Coal company	Chas. Beck	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Enterprise Coal company	Daniel Johns	Enterprise	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Madison Coal company	G. E. Walters	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Evans Brothers Coal company	Wm. Madison	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
Avon Coal company	B. Evans	Des Moines	Shaft.	Room and pillar.	Fan	Steam	Shipping.
McKinley Coal company	J. W. Hammond	Avon	Slope.	Room and pillar.	Fan	Steam	Shipping.
Newman Coal company	A. McKinley	Runnells	Slope.	Room and pillar.	Furnace	Horse	Local.
Mercantile Coal and Brick company	Chas Newman	Hastie	Slope.	Room and pillar.	Furnace	Horse	Local.
Bertrand and Tilton	Wm. Merchant	Commerce	Shaft.	Long wall	Furnace	Horse	Local.
	John Tilton	Commerce	Shaft.	Long wall	Furnace	Horse	Local.

WEBSTER COUNTY.

NAME OF COMPANY.	SUPERINTENDENT.	POST OFFICE ADDRESS.	SHAFT OR SLOPE.	PLAN OF WORKING.	HOW VENTILATED.	POWER USED.	SHIPPING OR LOCAL.
Crooked Creek Coal company No. 5.	F. E. Willson.	Webster City.	Shaft.	Long wall.	Fan.	Steam.	Shipping.
Pleasant Valley Coal company.	Jerry Dawson.	Kalo.	Shaft.	Room and pillar.	Fan.	Steam.	Shipping.
Gleason Coal company.	John Gleason.	Coalville.	Shaft.	Room and pillar.	Fan.	Steam.	Shipping.
Corey Coal company.	Reese Stephens.	Lehigh.	Shaft.	Room wall.	Fan.	Steam.	Shipping.
Craig and Dawson.	Jerry Dawson.	Kalo.	Shaft.	Long wall.	Fan.	Steam.	Shipping.
Daily Coal company.	M. Z. Williams.	Lehigh.	Shaft.	Room and pillar.	Furnace.	Steam.	Shipping.
Collins Coal company.	E. W. Collins.	Coalville.	Shaft.	Room wall.	Fan.	Horse.	Shipping.
Johnson Coal company.	W. J. Johnson.	Kalo.	Shaft.	Long wall.	Furnace.	Horse.	Shipping.
Irwin Brothers.	Thos. Irwin.	Kalo.	Shaft.	Long wall.	Fan.	Horse.	Local.
Morris and McClure Coal company.	Frank Owen.	Ft. Dodge.	Shaft.	Long wall.	Furnace.	Horse.	Local.
Upper Valley Coal company.	J. H. Orres.	Lehigh.	Slope.	Long wall.	Fan.	Steam.	Local.
Martin Coal company.	M. O. Kellogg.	Lehigh.	Shaft.	Room and pillar.	Furnace.	Horse.	Local.
Tinmon's Coal company.	Charles Timmons.	Moorland.	Shaft.	Long wall.	Furnace.	Horse.	Local.
Bennett Coal company.	Hugh Timmons.	Ft. Dodge.	Shaft.	Long wall.	Furnace.	Horse.	Local.
Calford Coal company.	S. Bennett.	Kalo.	Slope.	Room and pillar.	Furnace.	Horse.	Local.
Allen Coal company.	P. Lochray.	Moorland.	Shaft.	Room and pillar.	Furnace.	Horse.	Local.
Pence Coal company.	T. J. Allen.	Moorland.	Slope.	Room and pillar.	Furnace.	Horse.	Local.
Starberry Coal company.	H. Pence.	Lehigh.	Slope.	Long wall.	Furnace.	Horse.	Local.
	J. Starberry.	Kalo.	Slope.	Long wall.	Furnace.	Horse.	Local.

BOONE COUNTY.

Boone Valley Coal & R. R. Co. No. 1.	Robt. Kennedy.	Fraser.	Shaft.	Long wall.	Fan.	Steam.	Shipping.
Boone Valley Coal & R. R. Co. No. 3.	Robt. Kennedy.	Fraser.	Shaft.	Long wall.	Fan.	Steam.	Shipping.
Boone Valley Coal & R. R. Co. No. 5.	Robt. Kennedy.	Fraser.	Shaft.	Long wall.	Fan.	Steam.	Shipping.
Boone Valley Coal & R. R. Co. No. 6.	Robt. Kennedy.	Fraser.	Shaft.	Long wall.	Fan.	Steam.	Shipping.
Boone County Coal company.	Wm. Benson.	Boonsboro.	Shaft.	Long wall.	Fan.	Steam.	Shipping.
W. D. Johnson Coal company.	W. D. Morgan.	Boonsboro.	Shaft.	Long wall.	Fan.	Steam.	Shipping.
Crowe Coal company.	Wm. Crowe.	Boonsboro.	Shaft.	Long wall.	Fan.	Steam.	Shipping.
Risher Coal company.	T. W. Hughes.	Boonsboro.	Shaft.	Long wall.	Fan.	Steam.	Shipping.
Rodgers Coal company.	Geo. Rodgers.	Incline.	Shaft.	Long wall.	Fan.	Steam.	Shipping.
Wilson Coal company.	Jas. Wilson.	Plot Mound.	Shaft.	Room and pillar.	Furnace.	Horse.	Shipping.
McCormick Coal company.	Luther.	Slope.	Slope.	Room and pillar.	Furnace.	Horse.	Local.
Wiscup.				Room and pillar.	Furnace.	Horse.	Local.

JASPER COUNTY.

Colfax Consolidated Coal Company No. 6.	Geo. Richards.	Colfax.	Shaft.	Room and pillar.	Fan.	Steam.	Shipping.
Colfax Consolidated Coal Company No. 7.	Geo. Wilson.	Colfax.	Shaft.	Room and pillar.	Fan.	Steam.	Shipping.
Barrett Coal company.	J. W. Barrett.	Colfax.	Shaft.	Room and pillar.	Furnace.	Horse.	Local.
French Coal company.	E. P. French.	Newton.	Shaft.	Room and pillar.	Fan.	Steam.	Local.
Carson Bros. Coal company.	A. Carson.	Newton.	Shaft.	Room and pillar.	Furnace.	Horse.	Local.
Carson Coal company.	Thos. Snooks.	Newton.	Shaft.	Room and pillar.	Furnace.	Horse.	Local.
Lisbon Coal company.	Alfred Lisner.	Newton.	Shaft.	Room and pillar.	Furnace.	Steam.	Local.
Gunther Coal company.	John Gunther.	Colfax.	Shaft.	Room and pillar.	Furnace.	Horse.	Local.
Cavel Coal company.	John Cavel.	Vandalia.	Shaft.	Room and pillar.	Furnace.	Horse.	Local.
Brace Coal company.	John Brace.	Monroe.	Slope.	Room and pillar.	Furnace.	Horse.	Local.
Shaw Coal company.	Gilbert Shaw.	Draper.	Slope.	Room and pillar.	Furnace.	Horse.	Local.
Jno. McConaghy.	Jno. McConaghy.	Colfax.	Slope.	Room and pillar.	Furnace.	Horse.	Local.
Worrick Bros. Coal company.	Jas. Worrick.	Colfax.	Slope.	Room and pillar.	Furnace.	Horse.	Local.

GUTHRIE COUNTY.

Batschlet & Merchant Coal company.	John Merchant.	Panora.	Shaft.	Long wall.	Furnace.	Horse.	Local.
King & Stoddard Coal company.	E. E. Stoddard.	Bayard.	Shaft.	Long wall.	Furnace.	Horse.	Local.
Morris & Perkins Coal company.	Thos. Morris.	Fansler.	Shaft.	Long wall.	Furnace.	Horse.	Local.
Mallon Coal company.	M. Mallon.	Fansler.	Shaft.	Long wall.	Furnace.	Horse.	Local.
Scott Coal company.	W. H. Scott.	Fansler.	Slope.	Long wall.	Furnace.	Horse.	Local.
Cooper Coal company.	J. C. Cooper.	Fansler.	Shaft.	Long wall.	Furnace.	Steam.	Local.
Sipe & Munsell Coal company.	John Munsell.	Fansler.	Shaft.	Long wall.	Furnace.	Horse.	Local.
Clipper Coal company.	Wm. Merchant.	Panora.	Shaft.	Long wall.	Furnace.	Horse.	Local.
Reese Coal company.	David Reese.	Fansler.	Shaft.	Long wall.	Natural.	Horse.	Local.
Paul Coal company.	Jas. Paul.	Fansler.	Shaft.	Long wall.	Natural.	Horse.	Local.
Butler Coal company.	T. J. Butler.	Fansler.	Shaft.	Long wall.	Natural.	Horse.	Local.
Raner Coal company.	C. O. Raner.	Fansler.	Shaft.	Long wall.	Natural.	Horse.	Local.
Chapple Coal company.	Richard Chapple.	Jamaica.	Shaft.	Room and pillar.	Natural.	Horse.	Local.

DALLAS COUNTY.

Griscoe Coal company.	Thos. Griscoe.	Madrid.	Slope.	Room and pillar.		Horse.	Local.
Knox Coal company.	Wm. Knox.	Madrid.	Slope.	Room and pillar.		Horse.	Local.
Vernon Coal company.	G. W. Mongin.	Madrid.	Slope.	Room and pillar.	Natural.	Horse.	Local.
Reese Bros. Coal Company No. 1.	W. J. Reese.	Madrid.	Shaft.	Room and pillar.	Jet.	Steam.	Local.
Reese Bros. Coal Company No. 2.	W. J. Reese.	Madrid.	Shaft.	Long wall.	Fan.	Steam.	Local.
Hutchison Coal company.	W. C. Hutchison.	Dawson.	Shaft.	Room and pillar.	Fan.	Steam.	Local.

SCOTT COUNTY.

NAME OF COMPANY.	SUPERINTENDENT.	POST OFFICE ADDRESS.	SHAFT OR SLOPE.	PLAN OF WORKING.	HOW VENTILATED.	POWER USED.	SHIPPING OR LOCAL.
Hanlon Coal company.....	John Hanlon.....	Jamestown.....	Shaft.....	Room and pillar.....	Furnace.....	Horse.....	Local.....
Langwith Coal company.....	E. T. Langwith.....	Jamestown.....	Shaft.....	Room and pillar.....	Furnace.....	Horse.....	Local.....
Sass Bros. Coal company.....	Wm. Sass.....	Jamestown.....	Shaft.....	Room and pillar.....	Furnace.....	Horse.....	Local.....
Couch Coal company.....	Mike Couch.....	Buffalo.....	Shaft.....	Room and pillar.....	Furnace.....	Horse.....	Local.....
Glink Coal company.....	L. Glink.....	Jamestown.....	Shaft.....	Room and pillar.....	Furnace.....	Steam.....	Local.....
Glinther Coal company.....	M. H. Glinther.....	Jamestown.....	Shaft.....	Room and pillar.....	Furnace.....	Steam.....	Local.....
Buhlmeier & Carlton Coal company.....	Jno. Buhlmeier.....	Jamestown.....	Shaft.....	Room and pillar.....	Fan.....	Steam.....	Local.....

GREE\ E COUNTY.

Willow Grove Coal company.....	H. A. McElhenny.....	Angus.....	Shaft.....	Long wall.....	Fan.....	Steam.....	Local.....
Goodwin Coal company.....	Thos. Goodwin.....	Grand Junction.....	Shaft.....	Long wall.....	Fan.....	Steam.....	Shipping.....
Buckeye Coal company.....	Mike Fitch.....	Angus.....	Shaft.....	Long wall.....	Fan.....	Steam.....	Local.....
Ditchburn Coal company.....	Rolt Ditchburn.....	Angus.....	Shaft.....	Long wall.....	Fan.....	Horse.....	Local.....
Thomas Coal company.....	H. L. Thomas.....	Angus.....	Shaft.....	Long wall.....	Fan.....	Steam.....	Local.....
Keystone Coal company.....	W. M. Bennett.....	Angus.....	Shaft.....	Long wall.....	Furnace.....	Horse.....	Local.....

TABLE No. 1.

Showing number of mines, output of coal, number of miners and other employes in District No. 3 for the year ending June 30, 1902.

NAME OF COUNTY.	Number of mines.	Total amount of coal produced.	Number of miners.	Number other employes.	Average number of days worked.
Polk	80	981,610	1,284	487	214
Boone	17	236,800	680	211	169
Jasper	17	232,000	358	95	188
Webster	16	182,477	255	180	228
Dallas	7	84,750	88	88	218
Scott	12	21,978	106	18	190
Guthrie	12	17,250	121	39	188
Greene	4	16,192	46	16	209
Story	1	2,200	9	3	140
Total	118	1,858,152	2,882	996	.....

TABLE No. 2.

Showing number of mines, output of coal, number of miners and other employes in District No. 3 for the year ending June 30, 1903.

NAME OF COUNTY.	Number of mines.	Total amount of coal produced.	Number of miners.	Number other employes.	Average number of days worked.
Polk	25	996,573	1,127	488	222
Boone	12	288,055	430	165	225
Jasper	13	823,12	508	122	200
Webster	10	159,990	280	104	185
Dallas	6	19,690	75	85	150
Scott	7	18,280	80	12	180
Guthrie	13	16,515	75	15	200
Greene	6	12,711	53	9	195
Total	92	1,885,456	2,681	1,010	.....

TABLE NO. 3.

Showing the output of coal of the counties comprising District No. 3 for the past five years.

COUNTIES.	1899	1900	1901	1902	1903
Boone.....	871,410	281,180	502,800	286,800	288,055
Dallas.....	13,600	18,080	29,400	34,750	19,990
Greene.....	22,400	11,850	12,400	16,192	12,711
Guthrie.....	16,400	17,700	16,750	17,250	16,545
Jasper.....	184,800	159,200	184,500	153,400	323,312
Folk.....	790,410	854,500	688,600	931,610	996,573
Scott.....	11,800	19,650	22,400	28,978	18,280
Story.....	9,000	5,900	3,200	2,200	
Webster.....	187,650	156,400	167,800	182,477	151,990

ACCIDENTS.

During the past two years thirty-two non-fatal accidents have been reported to this office by the various companies. Doubtless other accidents have occurred, but not reported on account of not being of sufficient importance or through lack of attention on the part of the company.

Eighteen fatal accidents have occurred during the past two years.

Following is a summary account of each fatal accident occurring during the past two years:

Fatal accidents in District No. 3, for the two years ending June 30, 1903.

DATE.	NAME.	OCCUPATION.	LOCATION.	NAME OF COMPANY.	CAUSE OF CASUALTY.
July 13, 1901	Freeman Wade	Miner	Marquerville	Des Moines Coal and M. Co.	Fall of roof.
August 30, 1901	Jno. Mehalwick	Miner	Saylorville	Saylor Coal company	Flying coal.
September 6, 1901	Jno. Jacquith	Miner	Des Moines	Christy Coal company	Flying coal.
November 2, 1901	Jno. Enburg	Driver	Lehigh	Cracked Creek C. and R. R. Co	Fell down shaft.
November 25, 1901	James Cox	Miner	Des Moines	Midway Coal company	Fell of coal.
December 17, 1901	Alonso P. Trozella	Miner	Des Moines	Midway Coal company	Fell of coal.
January 19, 1902	James Burgess	Miner	Lehigh	Western Coal company	Fell of coal.
February 25, 1902	Joe. Turner	Miner	Des Moines	Wolfe Consolidated Coal Co.	Fell of coal.
May 7, 1902	Lewis Watkins	Miner	Des Moines	Wolfe Consolidated Coal Co.	Fell of roof.
June 9, 1902	John Jones	Miner	Des Moines	Wolfe Consolidated Coal Co.	Fell of roof.
June 25, 1902	Peter Peterson	Miner	Saylorville	Blount Coal company	Flying coal.
June 30, 1902	John Emanuel	Miner	Saylorville	Saylor Coal company	Flying coal.
September 27, 1902	John Jones	Miner	Saylorville	Saylor Coal company	Fell of slate.
October 11, 1902	John Braniff	Miner	Altam	Saylor Coal company	Fell of slate.
December 17, 1902	Swan Peterson	Miner	Norwoodville	Gibson Coal company No. 4.	Flying coal.
December 27, 1902	John Peterson	Miner	Des Moines	Norwood Coal company	Fell of slate.
January 9, 1903	N. B. Loesdon	Miner	Saylorville	Midway Coal company	Fell down shaft.
February 17, 1903	Richard Guthrie	Miner	Des Moines	Midway Coal company	Fell of slate.

Non-fatal accidents in District No. 3, for biennial period ending June 30, 1903.

DATE.	NAME.	NAME OF COMPANY.	LOCATION.	OCCUPATION.	CHARACTER OF INJURY.	CAUSE OF ACCIDENT.
July 26, 1901	Joe Wilson	Norwood Coal company	Norwoodville	Miner	Leg broken.	Fall of slate.
July 30, 1901	Robt. Hughes	Smith-Lowe Coal Co. No. 8.	Carbondale	Miner	Leg broken.	Fall of slate.
Aug. 20, 1901	J. H. Jinkins	Jasper Co. Coal Co. No. 6.	Seevers	Miner	Small bone in leg broken.	Fall of slate.
Oct. 31, 1901	John Pearson	Jasper Co. Coal Co. No. 6.	Seevers	Timberman	Back sprained.	Fall of slate.
Oct. 31, 1901	Harry Gibson	Jasper Co. Coal Co. No. 6.	Seevers	Miner	Ankle sprained.	Fall of slate.
Nov. 9, 1901	Ed Johnson	Keystone Coal company	Des Moines	Miner	Leg broken.	Flying coal.
Nov. 11, 1901	Wm. Wittche	Midway Coal company	Des Moines	Miner	Leg broken.	Fall of slate.
Nov. 23, 1901	Tom Davison	Jasper Co. Coal Co. No. 6.	Seevers	Miner	Left side, ribs and foot sprained.	Fall of slate.
Nov. 23, 1901	W. Thomas	Eagle Coal company	Des Moines	Miner	Face and hands burned.	Blown out shot.
Jan. 27, 1902	Emil Gustavson	Smith-Lowe Coal Co. No. 8.	Carbondale	Miner	Face and hands burned.	Blown out shot.
Jan. 27, 1902	Geo. Phillips	Smith-Lowe Coal Co. No. 8.	Carbondale	Miner	Face and hands burned.	Blown out shot.
Jan. 27, 1902	Wm. Newton	Smith-Lowe Coal Co. No. 8.	Carbondale	Miner	Face and hands burned.	Blown out shot.
Jan. 27, 1902	Arthur Johnson	Saylor Coal company	Saylorville	Miner	Leg broken.	Blown out shot.
April 10, 1902	Wm. Clark	Blountfield Coal company	Des Moines	Miner	Hand crushed.	Trying to ride tall chain.
April 24, 1902	Walker Clark	Smith-Lowe Coal Co. No. 8.	Carbondale	Miner	Hand crushed.	Fall of slate.
May 7, 1902	Robt. Heatcote	Des Moines Coal company	Marquisville	Miner	Brused	Caught in engine.
May 8, 1902	Harry Hughes	Collfax Con. Coal Co. No. 6.	Seevers	Miner	Injured internally	Flying coal.
May 18, 1902	Michs Burris	Collfax Con. Coal Co. No. 6.	Seevers	Miner	Brused	Fall of slate.
May 18, 1902	John Diggie	Collfax Con. Coal Co. No. 6.	Seevers	Miner	Brused	Fall of slate.
May 24, 1902	L. S. Blackore	W. D. Johnson Coal Co.	Boonsboro	Driver	Leg broken.	By trip.
July 24, 1902	Alon North	Gordwin Coal company	Boonsboro	Miner	Leg broken.	Between carts.
Aug. 23, 1902	Chas. Rogers	Quaker Con. Coal Co. No. 6.	Seevers	Miner	Leg broken.	Fall of slate.
Oct. 7, 1902	James Huff	Des Moines Coal company	Marquisville	Shot firer	Leg broken.	Fall of slate.
Oct. 7, 1902	F. Arrowood	Des Moines Coal company	Marquisville	Shot firer	Leg broken.	Fall of slate.
Oct. 8, 1902	H. Smith	French Brothers	Marquisville	Miner	Bones in foot fractured.	Flying slate.
Jan. 4, 1903	Walter Foreman	Des Moines Coal company	Marquisville	Miner	Ankle bone broken.	Case dropped.
Jan. 13, 1903	Fred Fordman	Smith-Lowe Coal Co. No. 2.	Carbondale	Driver	Scalp wound	Case run on him.
Jan. 15, 1903	Thos. Holland	Pleasant Valley Coal Co.	Coalville	Miner	Back bone fractured	Flying coal.
Jan. 23, 1903	Thomas Holland	Saylor Coal company	Saylorville	Miner	Leg crushed	Fall of slate.
Jan. 30, 1903	P. Ward	Smith-Lowe Coal Co. No. 2.	Carbondale	Driver	Collar bone broken	Caught between car and roof.
Feb. 8, 1903	Frank Harris	Norwood Coal company	Norwoodville	Miner	Collar bone broken.	Ran into trip.
March 10, 1903	Frank Jones	Smith-Lowe Coal Co. No. 2.	Carbondale	Shot firer	Face and hands burned.	Flames from shot.

FREEMAN WADE.

In the Des Moines Coal and Mining company's mine, located at Marquisville, in Polk county, on July 18, 1901, about three o'clock P. M., Freeman Wade, a miner twenty-seven years of age was killed in his room, No. 16, off the fourth east entry off the fifteenth south entry, by fall of roof. Mr. Wade went into his room to sound the roof and it fell, as he struck it with his pick, and crushed him. He was taken to the Methodist hospital in Des Moines and died there about 11:35 P. M., July 18th. Mr. Wade was aware that the roof was loose and had been warned by several not to go in his room. He was a single man.

JOHN MEHALIWICK.

On August 30, 1901, about 11:30 A. M., John Mehaliwick, a miner about fifty years of age, was killed in room No. 11, sixth east southentry, in the Saylor Coal company's mine, located at Saylor, in Polk county. Deceased and partner had two shots which they lit and went out to wait until they went off. One shot exploded, and after waiting they returned to the room to see why the second shot did not go off. When he reached the shot it exploded and killed him instantly. Deceased's family except one boy reside in Austria.

WILLIAM JACQUITH.

While working, as a coal miner, in the first room off the east entry of the twelfth south in the Christy Coal company's mine, located southeast of Des Moines, in Polk county, William Jacquith received injuries on September 6, 1901, about 11:30 A. M. from which he died.

While Mr. Jacquith and others were passing along the entry, a shot drilled and fired by James Giles, who worked in a room parallel to the entry, blew through the pillar, flying coal struck Mr. Jacquith and he died from the injuries.

JOHN ENBURG.

In the Crooked Creek Coal and Railroad company's mine No. 5, located at Lehigh, in Webster county, John Enburg, a driver, was killed by falling from the first landing to the bottom of the shaft, a distance of about 100 feet, on November 7, 1901.

Mr. Enburg opened the gate and evidently forgetting that it was opened, pushed a car into the shaft and apparently followed the same as both car and man were found at the bottom of the shaft. Deceased leaves a wife and five or six children.

JAMES COX.

James Cox, a miner about sixty years of age, who was employed at the Midway Coal company's mine, located southwest of Des Moines, Polk county, was killed in his room in the fifth east entry of said mine, on November 25, 1901, at about 4:30 P. M.

Mr. Cox and his son had fired two shots and had returned to relight the third, it having failed to go off. The son thinks his father used two squibs

the second time. The blast exploded before he could get away, injuring him to such an extent that he died. Deceased was married and leaves a wife and six or seven children.

ANGELO PIROZOLLA.

Angelo Pirozolla, a miner about twenty-five years of age, employed by the Bloomfield Coal and Mining company north of Des Moines, in Polk county, was injured in his room No. 3, ninth east entry, about 4:30 P. M. on December 17, 1901, and died while being taken to Mercy hospital about 7:30 P. M.

Mr. Pirozolla, not returning from the mine to his boarding house in the evening, two of the men returned to the mine to search for him. He was found alive in his room. His arm was broken, also leg and hip. He said he had lit his shot and a concussion from another shot in an adjoining room put out his light. In the darkness he failed to get out of his room before his shot went off.

JAMES BURGESS.

At 12:30 P. M. on January 10, 1902, at the face of the coal in the sixth place on fuel entry, in the Webster County Coal and Land company's mine, located at Lehigh, in Webster county, James Burgess, a miner, forty-two years of age, came to his death. Mr. Burgess and his partner, Mr. King, prepared their shot for noon firing. Mr. King lit the squib and they both departed for dinner, separating at the switch. Not hearing the explosion Mr. Burgess went back and put in another squib, and that failed. He returned again and put in another squib. After waiting, he went back to put in the fourth squib. When about twenty-five feet away No. 3 went off and Mr. Burgess was injured to such an extent that he died at 4:50 P. M. that day.

Mr. Burgess was a single man and leaves a mother.

JOSEPH TUMAS.

Joseph Tumas was killed in his room in mine No. 6 of the Colfax Consolidated Coal company, located three and one-half miles south of Colfax, on February 25, 1902, about 11:30 A. M.

The coal near the face was rising quite rapidly. Mr. Tumas was in the act of getting a car of coal away from near the face of his room so as to fire his shot at firing time. The surroundings where Mr. Tumas was found seemed to indicate that he had fallen under the car, throwing the same off the track, pinning him between a prop and the front end of the car, crushing him internally, from which injuries he died within a short time after being removed.

Mr. Tumas was a single man.

LEWIS WATKINS.

At mine No. 2 of the Bloomfield Coal company, located north of Des Moines, in Polk county, Lewis Watkins, a miner fifty years of age, was injured at 11:30 A. M. on May 1, 1902. Mr. Watkins was a married man

and had a wife and six children. He worked with his brother-in-law, Ed Hawkins, in the north entry. When they entered their entry in the morning they examined the roof and found it loose nearly up to the face. They thought it was just the edge of a thin piece of slate and that it would not require attention until afternoon, so neglected to attend to it. However, it fell and Mr. Watkins received injuries to his spinal column that eventually caused his death, which occurred on May 20, 1902.

JOHN JONES.

John Jones, a miner thirty-three years of age and who was acting, in company with Robert Heathcote, as shot firer, came to his death by being struck by flying coal from a shot in room No. 7 off the tenth east entry, off the first north entry, about 8:30 P. M., May 7, 1902, in Sailor Coal Company's mine.

They had fired several shots before reaching this room. After lighting the fuse they went out and waited for it to burn. After waiting what they thought was long enough they returned to investigate, and upon entering the room the shot exploded. Mr. Jones was injured by flying coal to such an extent that he died shortly afterward.

Mr. Jones leaves a wife and three children.

PETER PETERSON.

Peter Peterson, a miner in the employ of the Norwood Coal company at their mine one and one half miles west of Berwick, Polk county, was killed in his room, No. 9, second west of said mine on June 9, 1902.

He had two shots to fire. One shot went out but he did not know it; the other shot squibbed. He went back and put the needle in the hole; the shot went off throwing Mr. Peterson about fifteen feet and killing him.

JOHN EMANUEL.

In the Saylor Coal company's mine, located at Saylor, Polk county, five miles north of Des Moines, John Emanuel, a miner aged fifty-five or sixty, who had been in the employ of this company for two years, was accidentally killed by a fall of slate in his room, No. 24, fourth east south, at 7:30 A. M., on June 25, 1902. The slate fell from the rib side of his roadway, where he had put in a brushing shot. Evidently he had not taken down all the loose slate and it fell just as he was commencing his work for the day.

Deceased was a widower and leaves a family of two daughters and one son.

JAMES JONES.

James Jones, a miner about thirty years of age, was killed by slate falling on him at 11:30 A. M., on June 30, 1902, in his room, No. 3 off the eighth, east south, in Saylor Coal company's mine, at Saylor, in Polk county.

At this mine every man does his own firing, after the shots have been approved by the shot examiner. When it came his time to fire he told the

man in the place next to him to go ahead. He was missed by the driver and Chas. Meister. When A. Streeter and Chas. Meister went to his room to look for him he was found lying about ten feet from the face of the room with a piece of coal, that weighed about 150 pounds, on his head. The supposition is that his shot failed to go off and he returned to examine it, and that it went off as he was entering the room to investigate.

Mr. Jones was a married man and leaves a wife and two children.

JOHN ALLEN.

John Allen, a miner in the employ of the Gibson Coal company at their No. 4 mine, located one and one half mile west of Altoona, Polk county, was killed by flying coal from a shot, September 27, 1902.

Mr. Allen and his co-worker, Harrison McClintic, had prepared and lit their shot. Going to a place of safety, they thought, they awaited the explosion of the shot. Mr. McClintic was behind a pile of dirt and was uninjured. Mr. Allen, who was standing a few feet away, was struck by flying coal and instantly killed.

JOHN BRANIFF.

John Braniff, a young man aged 19 years, who was working with his father in the Norwood Coal company's mine northeast of Des Moines, in a room at the mouth of the third east entry, north side, was killed while loading a car of coal by a fall of slate in the shape of a horse back, caused by a slip in the roof, at 11:15 A. M., December 11, 1902.

They had sounded the roof the two days previous and believed the same to be in safe condition. However, like a great many cases, it unexpectedly fell, killing the young man almost instantly.

LINCOLN DAVIS.

In the Saylor Coal company's mine, located at Saylor, in Polk county, on December 10, 1902, about 4:00 P. M., Lincoln Davis, a miner, received injuries from which he died the following day at Mercy Hospital in Des Moines.

Slate fell on him while he was waiting his turn to shoot at the face of his room No. 10, tenth west south entry, breaking his leg and injuring his back.

SWAN PETERSON.

Swan Peterson was killed in the Midway Coal company's mine, two and one half miles southwest of the city of Des Moines, at 3:00 P. M., on December 27, 1902.

He was working in a room with Charles Lext, which room was number three off the eighth, east entry on the south side of the shaft. Mr. Peterson had just finished loading a car and was in the act of shoveling coal from the left hand rib of their room when a piece of slate fell from between two slips, commonly called a horseback, breaking his back and causing internal injuries from which he died shortly after being brought to the surface.

N. B. LOGSDON.

On January 9, 1903, at 5:40 P. M., N. B. Logsdon, a miner in the employ of the Saylor Coal company at Saylor, in Polk county, fell from the ground landing to the bottom of the shaft. He breathed but a few times after striking the bottom.

Mr. Logsdon and his partner, Mr. Thomas, were letting down props. Before the first cage was sent down they sent the cager down and the cage was not returned, although they did not know it. They neglected to put the bar across the shaft. They then loaded a car of props and did not ascertain whether the cage had been returned to the ground landing. The car was pushed into the empty shaft and Mr. Longsdon followed it down. Mr. Thomas caught the center post and thus saved his life.

RICHARD D. GUTHERIE.

Richard D. Guthrie, a miner in the employ of the Midway Coal company, located three miles southwest of Des Moines, was instantly killed by slate falling on him in his room, between 9 and 10 o'clock in the morning, on February 19, 1903.

Mr. Guthrie's attention had been called to the unsafe condition of the roof in his room, but thinking it was safe he failed to put any props up. While he was at work under this loose slate and rock it fell and completely buried him under it.

TWELFTH
BIENNIAL REPORT
OF THE
BOARD OF HEALTH
OF THE
STATE OF IOWA
FOR THE
PERIOD ENDING JUNE 30, 1903



DES MOINES:
B. MURPHY, STATE PRINTER.
1903.

LETTER OF TRANSMITTAL

STATE OF IOWA,
OFFICE OF SECRETARY STATE BOARD OF HEALTH,
DES MOINES, July 1, 1903

To ALBERT B. CUMMINS, *Governor of Iowa*:

SIR,—In accordance with the provisions of section 2565 of the Code, the Twelfth Biennial Report of the State Board of Health for the period ending June 30, 1903, is herewith presented.

J. F. KENNEDY, *Secretary*.

MEMBERS OF THE BOARD

CHARLES W. MULLAN, Attorney-General, Des Moines, *ex officio*.

PAUL O. KOTO, State Veterinary Surgeon, Forest City, *ex officio*.

CHARLES FRANCIS, Civil Engineer, Davenport.

Appointed by Governor.	Health Districts.	Term Expires.
C. B. Adams, Sac City (H).....	Fifth	January 31, 1904
J. A. McKlveen, Chariton (E).....	Eighth	January 31, 1905
Henry Matthey, Davenport (R)	Second	January 31, 1906
E. E. Conniff, Sioux City (R).....	Fifth	January 31, 1907
F. W. Powers, Waterloo (R)....	First	January 31, 1908
J. H. Sams, Clarion (R).	Fourth	January 31, 1909
A. M. Linn, Des Moines (H)	Seventh	January 31, 1910

The Third and Sixth districts are not represented. The Third district lost its representation May, 1901, by the resignation of W. Bancroft, of Keokuk; and the Sixth by the resignation of Senator J. H. Emmert, of Atlantic, December, 1897.

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PREFACE

In the preparation of this report I have endeavored to follow the requirement of section 2565 of the Code, which makes it the duty of the Secretary of the State Board of Health, in his biennial report to the Governor, to "include so much of its proceedings, such information concerning vital statistics, such knowledge respecting diseases, and such instruction on the subject of hygiene as may be thought useful for dissemination among the people, with such suggestions as to further legislation as may be thought advisable."

It will be noticed in comparing this report with former ones from this office, that no previous one contained so many and such important and instructive papers from the members of the State Board of Health.

A large amount of space is given to Sewage Disposal; Tuberculosis and its Care and Treatment in Sanatoria; Smallpox; Milk and matters of practical sanitary interest, as well as a report of the meetings of the Board.

A glance at the table of contents will indicate the wide range of topics presented, in many respects by eminent specialists in the subjects considered.

J. F. KENNEDY.

I

BOARD MEETINGS

SECOND QUARTERLY MEETING, AUGUST, 1901

By order of the President the Iowa State Board of Health, met in second quarterly session at the office of the State Board of Health, Des Moines, August 14th, and was called to order by the secretary in the absence of President Shrader, in Europe, and Dr. R. E. Conniff was elected president *pro tempore*.

There were present Conniff, Adams, Gibson, Linn, Powers and Matthey.

The quarterly report of the secretary was read and referred to the appropriate committees.

The secretary reported the following respecting infectious diseases:

There has been a great falling off in the number of outbreaks of smallpox as compared with the last three or four quarters. Scarlet fever reports, however, were rather in excess during the month of July. There has been also a notable decline in diphtheria outbreaks. There is no occasion, however, for further detail on this point as the card reports from time to time and the *Bulletin* have kept you promptly and fully informed as to these casualties. It may be proper to say that the state is comparatively free from these diseases at the present time.

TUBERCULOSIS

The following statement was made by the secretary in regard to tuberculosis:

It was doubtless a great surprise in the late Tuberculosis Congress in London to have Prof. Koch declare that tuberculosis in cattle and in human families were not identical, and that the disease could not be

communicated to the human family by the use of the meat and milk of tuberculous cows. The *Bulletin* now in press, gives the consensus of opinion of some leading observers upon his statement. The venerable and eminent Lord Lister of London, and Brouardel of Paris, besides noted authors in this country are not in sympathy with the views expressed by Prof. Koch. If his statement is true all our text-books and circulars on tuberculosis will have to be revised, and future scientific conclusions on this disease will be received with doubts, since it was thought that the views ordinarily held and promulgated heretofore were based upon indisputable scientific demonstrations.

FINANCIAL

The following exhibit shows the expenditures of the Board for the quarter ending July 31, 1901. The items of expenditures were as follows:

Board meeting, May 22, 1901.

MEMBERS' EXPENSE ACCOUNT

C. B. Adams	\$25.46
J. C. Shrader	21.28
R. E. Conniff	34.40
H. Matthey	29.00
J. A. McKlveen	17.30
A. M. Linn	8.50
F. W. Powers	24.20
J. I. Gibson	27.08
Total	\$ 187.22

Paid by State Warrant No. 8117.

SPECIAL EXPENSE ACCOUNT

J. I. Gibson, Tuberculosis Congress, New York City,	138.00
Paid by State Warrant No. 8116.	

CURRENT EXPENSE ACCOUNT, MAY, 1901

J. F. Kennedy, Secretary.....	\$100.00
Margaret S. Schoonover, Stenographer.....	65.00
Meyers & Tucker, <i>Bulletin</i> mailing list	73.81
Meyers & Tucker, printing May <i>Bulletin</i>	56.30
J. C. Shrader, investigating smallpox	11.05
Lewis Schooler, postal cards	10.00
A. M. Linn, investigating smallpox	9.85
R. E. Conniff, telegrams, livery, etc	5.67
F. W. Powers, investigating smallpox	3.98
Puck Manufacturing Co., disinterment permits	4.50
Iowa Litho Co., letterheads	3.00
Langan Bros., bond paper	1.20

Bausch & Lomb, Journal, 1901.....	1.00
U. S. Express Co.,.....	.52
Total	\$ 245.38

Paid by State Warrant No. 8362.

CURRENT EXPENSE ACCOUNT, JUNE, 1901

J. F. Kennedy, Secretary.....	\$100.00
Margaret S. Schoonover, Stenographer.....	65.00
Meyers & Tucker:	
Printing June <i>Bulletin</i>	\$50.00
Mailing June <i>Bulletin</i>	6.30
Postage for April.....	2.82
Postage for May	2.90
	\$62.02

Iowa Litho Co., 9,000 letter heads:

3,500 Office of Secretary.	
2,500 Office of President.	
3,000 Members.	
700 envelopes (200 stamped) for President.	
	48.50

Geo. A. Miller Printing Co.:

1,500 postals	\$15.00
Printing 2,300 postals	4.75
2,500 circulars	4.75
2,500 1c envelopes	27.50
Printing 2,500 envelopes.....	2.25
	\$ 54.25

C. B. Adams, investigating smallpox	17.33
J. C. Shrader, investigating smallpox	16.54
Adams Express Co	1.26
American Express Co.	1.46
U. S. Express Co.....	.76

Total \$ 367.12

Paid by State Warrant No. 8779.

CURRENT EXPENSE ACCOUNT, JULY, 1901

J. F. Kennedy, Secretary.....	\$100.00
Margaret S. Schoonover, Stenographer.....	65.00
Meyers & Tuvker, printing and binding <i>Bulletin</i>	56.30
Lewis Schooler, stamped envelopes	42.00
C. B. Adams, investigating smallpox	28.62
F. W. Powers, investigating smallpox	25.75
Langan Bros., stationary	11.33

Star Engraving Co.....	5.85
Iowa Litho Co., letterheads (Powers)	5.00
Southern Printers' Supply Co., electros	3.25
Puck Mfg. Co.....	1.75
Southern Printers' Supply Co., electros	1.00
Adams Express Co.....	1.40
U. S. Express Co.....	2.15
R. E. Conniff, investigating smallpox	9.87

Total \$ 359.26

Paid by State Warrant No. 9747.

Recapitulation:

Members' expense account	\$187.22
Special expense account	138.00
Current expense account, May.....	345.88
Current expense account, June	367.12
Current expense account, July.....	359.26

Total \$ 1,397.48

Previously expended 2,714.77

\$4,112.25

Balance on hand\$887.75

REPORT OF AUDITING COMMITTEE

Your auditing committee, to whom was referred the financial report of the Secretary for the quarter ending July 31, beg leave to report that the same has been carefully audited and found correct.

H. MATTHEY, *Committee.*

The report was received and adopted.

The report was received and adopted.

DISINTERMENT PERMITS

Secretary reported that for the quarter he has issued from the office 235 ordinary permits in addition to the fifteen special permits granted by the Board at its last meeting. He presented the following applications for special permits, which were referred to the committee on corpses, who subsequently reported in favor of the granting of them all. The report was adopted and the secretary directed to issue the permits accordingly.

FRANK BROWNFIELD GASS, 1890, *diphtheria*, by private conveyance from St. Ambrose cemetery, Des Moines, to Youngstown cemetery, Polk county.

ALVIN T. HARDEN, 1863, *diphtheria*, by private conveyance from Queen City cemetery, Quincy township, Adams county, to Walnut Grove cemetery, Corning, Iowa.

EMMA KLEMA, 1900, *scarlet fever*, by private conveyance from private burying ground, Silver township, Cherokee county, to Highland cemetery, Highland township, O'Brien county.

CHARLES HOSS KNAPP, 1895, *scarlet fever*, by private conveyance from Exira cemetery to another lot in same cemetery.

ANNA M. KRAUSE, 1863, *membranous croup*, by private conveyance from Johnson cemetery, Scotch Grove township, Jones county, to Wyoming cemetery in Wyoming, Iowa.

GEORGE W. KRAUSE, 1870, *scarlet fever*, by private conveyance from Johnson cemetery, Scotch Grove township, Jones county, to Wyoming cemetery in Wyoming, Iowa.

HOWARD ROBERTS, 1886, *croup*, by private conveyance from Hewitt cemetery, Grant township, Montgomery county, to another lot in same cemetery.

BERTHA N. SWANSON, 1891, *diphtheria*, by railroad from Irvington cemetery, Kossuth, to Gilbert cemetery, Gilbert, Iowa.

LENA N. SWANSON, 1891, *diphtheria*, by railroad from Irvington cemetery, Kossuth county, to Gilbert cemetery, in Gilbert, Iowa.

HITIE WHITE, 1863, *diphtheria*, by railroad from Woodland cemetery, Des Moines, to Greenwood cemetery, Brooklyn, N. Y.

GASOLINE LAMPS

The following gasoline lamps were approved by the Board:

"Turner Arc Pressure Lamp No. 10," "Little Wonder No. 20," "Delmar Vapor Lamp," "Improved Welsbach—Students Lamp."

At previous meetings of the Board the following additional lamps were approved:

"Nullite Arc," "Bystrom Gas Lamp," "Corona," "Columbia," "Morey's No Mantle," "Grinnell Lamp," "Sterling Arc," "Sterling Gravity," "White Star," and "One Gallon Doran."

"The American Arc No. 2," "The Magic Arc," "The Magic Gravity," "The Solar Arc."

"The Simplicity style B," "The Efficient No. 6," "Pressure Arc Lamp No. 5 E," "New Century Lamp No. 50," "The Rockford X-Ray," "Omaha Automatic Gas Lamp," "Standard Gas Lamp," "The Columbian," and "The Imperial Lamp." "The M. & M. Arc," two styles, one for store and one for street, and the "No. 5 Special."

It is to be understood that the Board does not issue guarantees of safety for any of these lamps and does not specially commend any one as more than reasonably safe under proper care.

No gasoline lamp not having the approval of the Board, after due test and consideration, can be used in Iowa without violating the law and subjecting those using them to severe penalties.

EMBALMERS

The Board directed the Secretary to issue Embalmers permits to sixty-three applicants, all of whom passed a satisfactory examination before the Board in May, except one who was granted a permit by reciprocity as the holder of a permit from the Illinois State Board of Health.

[Applicants from other Boards requiring examinations, who have permits from such Boards, are admitted to certificates in Iowa upon the presentation of said certificates and the payment of the prescribed fee, without examination, *provided* the other Board issuing the certificate extends the same courtesy to those holding permits from the Iowa Board.—Sec'y.]

AMERICAN PUBLIC HEALTH ASSOCIATION

Drs. Gibson, Adams and Powers were elected delegates to attend the meeting of the American Public Health Association to be held at Buffalo, N. Y., September 16th-20th, *proximo*.

CONTAGIOUS DISEASES

The committee on contagious diseases, Drs. Matthey and Adams, were instructed to report at next meeting, what, if any, changes should be made in the rules and regulations relating to quarantine.

In reply to a communication from Dr. C. H. Preston of Davenport, relative to shortening the quarantine period in cases of diphtheria where anti-toxin has been used, Dr. Powers to whom the communication was referred reported as follows:

"Your committee would recommend that until more reliable data are at hand from skilled bacteriologists demonstrating that the Klebs-Loeffler bacillus loses its element of contagion or ceases to exist in the nasopharynx, or else where in the animal economy prior to the seventeen days after apparent full recovery that the quarantine period for diphtheria remain as now approved by our Board according to rules 8, 9, and 10."

VISITING INFECTED LOCALITIES

The Board directed the Secretary to inform the local health boards of the state whether rural or urban that calls for visits by members of the Board to assist in quarantine or for any official purpose must be made by the proper official authority, whether mayor or township clerk, and the expenses of such visits must be met by the locality desiring the visit, as the state makes no provision for such expenses.

Board adjourned to meet the first Wednesday in November unless otherwise ordered by the President.

THIRD QUARTERLY MEETING—NOVEMBER, 1901

The State Board of Health met in third quarterly session, November 19th, and was called to order by President Dr. J. C. Shrader at 10 A.M.

There were present Drs. Shrader, Powers, Linn, McKlveen, Coniff, Adams, and Mathey; State Veterinary Surgeon, Dr. Gibson, and Civil Engineer, Charles Francis.

The minutes of the last meeting were read and approved.

The report of the secretary for the quarter ending October 31st was read, received and referred to appropriate committees.

The following legislative committee was appointed:

McKlveen, Shrader, Linn, Attorney-General Mullan and Powers.

Charles Francis was appointed on the committee on Gasoline Lamps and also Chairman of the Committee on Plumbing and Ventilation.

President Shrader delivered the following introductory address.

GENTLEMEN AND MEMBERS OF THE STATE BOARD OF HEALTH:

As members of the State Board of Health, it becomes us to be on the alert, in order to protect the people against infectious and contagious diseases. The Board was created for that express purpose and, after serving as a member for the past fifteen years, I feel that we can report progress. But there still remains much to be done; the people should be educated in the principles of hygiene—it is by its study, and the practice of the principles taught in sanitary science, that we can say to them (the people) that disease in nearly all of their multifarious forms should not exist. They are preventable, and, in the language of the learned men of the world, are "curable."

What diseases are proving the messengers of death in this, our day? Tuberculosis, diphtheria, the exanthemata—or diseases accompanied by a rash or an eruption on the skin—then bubonic plague, typhoid fever, yellow fever, cholera. Now all these are preventable. They are known, or nearly all, to be germ diseases—due to living parasites; and parasites, like other living things, can be exterminated. At the present time the people of the state are suffering from an epidemic of smallpox. That it has existed in the state for the past three years; there has been no time since its first invasion when we could say that it had been entirely eradi-

cated. It is true, there have been times that it had almost ceased to exist, but from various causes it soon broke out again, until now a large number of places are infected; and as far as my observation extends it is easier prevented—stamped out. When existing in its true and unmasked form—when it was of such a loathsome character, and of so virulent a form, and produced such terrible ravages—then the people fled from the pestilence, then they were ready to submit to vaccination and to assist the authorities in every way they could to obtain relief.

The present epidemic has been of a very different character and has added very much to the difficulties in controlling the disease. Its very mildness has of itself given rise to much discussion as to its real nature and character. In many cases it differed so much from the original prototype, that in some instances physicians, that were honest in their belief and intentions, were led for a while to believe that it must be some other, or a different kind of disease; but these men, those that were honest, and seeking light and truth, became convinced of its true nature, and so manfully stated, and then did all they could to correct the error they had committed, and were ready and willing to obey the rules and regulations of the State Board of Health in the way of vaccination, disinfection, quarantine, etc. But what shall I say of another, though I am happy to say, not a large class of physicians—men holding certificates from the State Board of Medical Examiners—allowing them to lawfully practice their profession—many of these enjoying the confidence of the people, and a lucrative practice, who are either ignorant of the nature of the affection, or else, for the sake of popularity among a certain class who proclaim themselves opposed to vaccination; others object to quarantine, and look, in their misguided opinions, upon quarantine as a persecution and not in its true light as a means of protection to the people, giving them warning not to enter the premises where the card is placed, and to prevent the persons, where a dangerous disease exists, from mingling with the people and thus spreading the disease among their unsuspecting neighbors, and endangering their health and lives. There are others who seem to think it is lowering their standing as members of the medical profession to have it known, or to acknowledge they were mistaken, and so they continue to call the disease by some other than its own and true name thus allowing it to spread through the community, and in many cases, over a large area. And I am sorry to state, there are others who, to please their patrons, and to render themselves popular, knowingly and wilfully violate the laws of the state, and the rules and regulations of the State and Local Boards of Health.

Now these men should be prosecuted in the civil courts, and be held financially responsible, for endangering the lives and health of the people. The law is amply sufficient, and convictions could be easily secured against all such offenders. It is also a misdemeanor, and he can be further subjected to imprisonment for such neglect or refusal to obey the rules and regulations of the State and Local Boards of Health in regard to quarantine.

While comparatively few deaths have occurred from this mild form of smallpox, much suffering has been caused, and a great loss to indi-

viduals and communities by the expenses of quarantine, disinfection, and the destruction of property, and by the loss and interruption of business. It therefore behooves every community, for financial, if no higher considerations, to be prepared to enforce prompt, vigorous, and, above all, intelligent measures to suppress the disease upon its first appearance.

Smallpox, like fire, is easily stamped out in the beginning. Hence the necessity for prompt action in the first, or initial case, in a community. If prompt measures are then taken, an outbreak or an epidemic may be averted.

It was ordered that a revised edition of Circular No. 8, on smallpox, be issued by the Secretary for free distribution.

SPECIAL DISINTERMENT PERMITS

The board directed the secretary to issue the following special disinterment permits:

DOT ALLEN, 1882, *scarlet fever*, from Allen's farm, Vernon township, Palo Alto county, by private conveyance to Evergreen cemetery, Emmetsburg, Iowa.

RALPH BRENNAN, 1901, *diphtheria*, from St. Marguerite's cemetery, Davenport township, Scott county, to another lot in the same cemetery.

ADDIE CHANDLER, 1872, *membranous croup*, from Franklin Grove cemetery, Pierce township, Page county, to Evergreen cemetery, Red Oak.

CARRIE GUPTIL, 1879, *scarlet fever*, from Eldora cemetery, Dover township, Fayette county, to Waucoma cemetery, Waucoma, Iowa.

ESTHER CARR, 1896, *membranous croup*, from Woodland cemetery, Des Moines, to another lot in the same cemetery.

NANCY LAIRD, 1872, *scarlet fever*, from Middlefield cemetery, Middlefield township, Buchanan county, to Fairview cemetery, Byron township, Buchanan county.

WILLIE LAIRD, 1875, *scarlet fever*, same as above.

JAMES B. MCCARTHY, 1894, *diphtheria*, from Mt. Olivet cemetery, Table-Mound township, Dubuque county, to another lot in the same cemetery.

ELLEN McCORD, 1878, *diphtheria*, from Oak Hill cemetery, Cedar Rapids, to Linwood cemetery, same city.

MARY I. McGRATH, 1887, *scarlet fever*, from St. Mary's cemetery, Davenport, to Holy Family cemetery, same city.

LULA MAY MILLER, 1894, *diphtheria*, from Lake View cemetery, Center Grove township, Dickinson county, to another lot in the same cemetery.

HANNAH RISLEY, 1861, *diphtheria*, from Middlefield cemetery, Middlefield township, Buchanan county, to Fairview cemetery, Byron township, Buchanan county.

JACOB RISLEY, 1861, *diphtheria*, same as above.

ADA VANDEWILL, 1901, *diphtheria*, from Prine cemetery, West Harrison township, Mataska county, to Pella cemetery, in the city of Pella.

WILLIAM VAN DOHREN, 1878, *diphtheria*, from cemetery in Galva township, Ida county, to Ida Grove cemetery, Corwin township, Ida county.

HERALD CHARLES VOLLMER, 1898, *scarlet fever*, from Aspen Grove cemetery, Burlington, to another lot in the same cemetery.

DAVID FORRESTER CALL, 1890, *diphtheria*, from Oakland cemetery, Iowa City, to Webster City cemetery, Webster City.

HENRY MENDEL, 1890, *diphtheria*, from St. Mary's cemetery, Davenport, to Fairmount cemetery, Rockingham township, Scott county.

Two applications for disinterment of bodies dead from smallpox were rejected, and permits refused.

All the above were to be removed by private conveyance and under the special conditions required in such cases.

FINANCIAL

The secretary submitted his financial report showing detailed expenditures for the quarter ending October 31. The report was received and referred to the auditing committee, who subsequently reported as follows:

"Your Auditing Committee, to whom was referred the financial report of your Secretary for the quarter ending October 31, 1901, respectfully report that we have carefully audited the same and find it correct in every particular. We find proper vouchers on hand for each item of expenditure.

"(Signed.)

H. MATTHEY, *Chairman*."

The report was received, adopted and placed on file.

The following is the report in full as above referred to:

Board Meeting August, 1901.

MEMBERS' EXPENSE ACCOUNT

F. W. Powers	\$ 20.45
H. Matthey	23.25
J. I. Gibson	26.58
A. M. Linn	10.00
C. B. Adams	20.71
R. E. Conniff	33.50
Total	<u>\$134.49</u>
Paid by State Warrant No. 9812.	

CURRENT EXPENSES AUGUST, 1901

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
Meyers & Tucker, printing and mailing <i>Bulletin</i>	56.30
R. E. Conniff, telegraph and telephone	4.87
Geo. A. Miller Printing Co., envelopes	1.50
Louis Schooler, postage	.80
Adams Express Co	1.25
American Express Co	3.29
U. S. Express Co	2.70
Wells-Fargo & Co., express	1.00
Total	<u>\$236.71</u>
Paid by State Warrant No. 9940.	

CURRENT EXPENSE ACCOUNT, SEPTEMBER, 1901

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
Louis Schooler, postal supplies	81.87
Meyers & Tucker, printing and mailing <i>Bulletin</i>	61.88
Carter & Hussey, binding <i>Bulletin</i>	17.00
Star Engraving Co., half tones	15.45
C. B. Adams, investigating smallpox	3.55
Adams Express Co	.25
American Express Co	1.80
Total	\$345.80
Paid by State Warrant No. 10657.	

SPECIAL EXPENSE ACCOUNT

C. B. Adams, expenses to Buffalo	\$ 69.80
Paid by State Warrant No. 10658.	
J. I. Gibson, expenses to Buffalo	100.95
Paid by State Warrant No. 10659.	
J. C. Schrader, expenses to London, Eng	400.00
Paid by State Warrant No. 10739.	
F. W. Powers, expenses to Buffalo	61.00
Paid by State Warrant No. 10896.	

CURRENT EXPENSE ACCOUNT, OCTOBER, 1901

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
Meyers & Tucker, printing and mailing <i>Bulletin</i>	56.80
J. C. Schrader, investigating smallpox, Grinnell	5.00
Harris-Emery Co., felt, etc., for office	2.05
American Medical Association (Journal)	.70
Medical Review of Reviews	.50
Popular Science Monthly	.50
U. S. Express Co	.85
Total	\$230.90
Paid by State Warrant No. 11055.	

The fiscal year ended with September 30th. The entire amount of the appropriation having been expended, the expenditure of \$230.90 for October and the special expenditures of Drs. Schrader and Powers make the total amount expended out of the current appropriation, \$691.90. Leaving unexpended of the appropriation \$4,308.10.

SCHOOLS

Dr. McKlveen presented the following report on schools, which was read, received and ordered printed:

REPORT OF COMMITTEE ON SCHOOLS

"Contagious Diseases in Schools and the Best Means of Prevention."

I find upon looking up reports, rules and regulations adopted by this Board at various times, very little can be added to what has already been said or done as touching the above. The Board has evidently been alive to the fact that no more important matter could come before them for their careful deliberation and action than the best methods for the prevention of contagious diseases in our schools.

Upon examination of the Bulletins and Biennial Reports for years back, I find there is "line upon line and precept upon precept" upon this subject. When we take into consideration the fact, eliminating the single disease tuberculosis, that nine-tenths of the cases of contagious diseases are among school children, and the larger proportion of these cases contract these diseases in the school room, we must be impressed with the importance of throwing around the children every possible safeguard. I have not had time to look up statistics on the subject very carefully, but I believe they will bear me out in the statement just made. It is well known that nearly all cases of scarlet fever and diphtheria occur in children during the period in which they attend school—say from the age of five to fifteen. Scarlet fever seldom attacks persons of adult age, and when it does it is usually very mild and seldom proves fatal. There are three recognized forms of the disease: *Scarlatina simplex*, *scarlatina anginosa* and *scarlatina maligna*. These divisions are arbitrary and simply denote degrees or grades of the disease as to mildness or severity. The germ that produces the one will also produce the others. Simple scarlet fever (scarlet rash, as it is usually called by the laity and even by physicians) may be so mild as not to confine the patient to the house, and when permitted he will often go to school during the whole course of the disease. Herein lies the great danger of infection, as one child may infect a whole school. Physicians are often not called to see these cases and the parents cannot be made to believe that it is necessary to quarantine or even to keep their children out of school. The bacillus being identically the same in every form of the disease, the milder forms may be converted into the more severe form, as it occasionally is, and it is only then that the true character of the disease is recognized and measures adopted to check its ravages, often too late for some of the little sufferers.

What has been said of scarlet fever may also be said in regard to diphtheria. Both may be so mild as not to require medical aid, and on the other hand, to be so malignant as to cause death in spite of the best medical skill. That both of these diseases in every form are contagious there can be no doubt, hence the importance of being informed with regard to the symptoms and course of these diseases, and especially the

milder forms, cannot be too strongly impressed upon the attention of parents and teachers.

It is our opinion that teachers ought to be required, as a part of their training, to study the symptomatology of contagious diseases and pass a satisfactory examination upon the same before receiving a certificate. If a rule of this kind was adopted and strictly enforced it would greatly lessen the danger of epidemics and the spread of contagious diseases, thus sparing the suffering and saving the lives of many of the little ones. As soon as symptoms of any contagious diseases manifest themselves, the child should be sent home immediately by the teacher and not be permitted to return until he brings a health certificate from a competent physician, stating that the child is free from contagious diseases and not in a condition to communicate such diseases to others.

No one should be permitted to teach or attend any school who is suffering from tuberculosis, and teachers should be required to furnish a physician's certificate as a pre-requisite to examination by the County Superintendent for a certificate to teach, certifying that the applicant shows evidence of having been successfully vaccinated and free from any contagious disease, and the certificate of the Superintendent should show upon its face that the holder has furnished such evidence.

The rules and regulations of the State Board of Health do not at this time require the quarantine of measles and chickenpox. Chickenpox is seldom, if ever, fatal, and causes but little suffering and inconvenience; hence the public is not yet ready to willingly submit to a regulation requiring quarantine for a disease so mild as chickenpox.

Measles, however, is much more to be dreaded. It more often proves fatal in its immediate results and its sequela frequently bring suffering and death later on. This disease from time immemorial has been considered by the laity as a kind of necessary evil that had to be endured at some period of life, and the sooner the better, because the disease is milder in early life than in old age. Measles is a preventable disease and can be stamped out by proper methods, and the sooner we set about to accomplish this end the better.

If the people generally could be made to understand this matter they would be as willing to submit to quarantine methods in this disease as in smallpox or any other quarantinable disease.

TAMA INDIANS

Communications and a report by Dr. Linn were laid before the board respecting the outbreak among the Indians on the reservation in Tama county. It was shown that there had been a number of cases and twenty-five deaths from smallpox. It was also reported that proper precautions against its spread had not been enforced, and that the Indians themselves were not having proper care.

A question arose as to what authority the state or local board of health had in localities under federal control. Drs Powers

and Gibson were appointed a committee to confer with Governor Shaw and Attorney-General Mullan in regard to the matter. As a result the governor telegraphed the situation to the Secretary of the Interior, and in reply received the following:

"Department will be glad to co-operate with State Board authorities in protecting people in Tama county against smallpox among Indians, and will so instruct Indian Agent in charge. Under the exigency shown in your telegram your State Board of Health and state authorities may take any necessary action.

E. A. HITCHCOCK,

"(Signed.)

Secretary of the Interior."

Upon the receipt of this telegram Dr. Linn was directed, immediately upon the adjournment of the meeting, to go to Toledo and personally assist the Agent there. Mr. Malin, in inaugurating such measures as will best and most promptly relieve the Indians themselves and also prevent its spread outside of the agency.

GASOLINE LAMPS

The following gasoline lamps were approved by the Board and their use permitted in the state: "Standard Gas Lamp;" "Standard Arc Lamp. No. 39;" "Efficient Vapor Lamp, No. 2;" "Efficient Vapor Lamp, No. 6," and "Sun Incandescent Vapor Gas Lamp."

VACCINATION

Communications were laid before the Board asking if the internal administration of vaccine, or any substitute therefor, might under the rules of the Board respecting vaccination, be accepted by local boards in lieu of such vaccination.

The matter was referred to the Committee on Contagious Diseases. Dr. Adams, on behalf of the committee, submitted the following report, which was adopted:

"Your committee, to whom has been referred the communication upon vaccination and substitutes therefor, would respectfully recommend that the communications be referred to a committee consisting of Drs. A. M. Linn and F. W. Powers for immediate investigation, with instructions to report at the next session, and that the Secretary be instructed to inform the parties that this Board does not at present recognize this form of vaccination."

The report was received and adopted.

CEMETERIES AND WATER SUPPLIES

A communication was laid before the Board by the secretary asking the following:

"In what light, as to being dangerous or otherwise, would the State Board of Health consider the locating of a cemetery within twenty rods

of a fifty-feet deep well, where the surface of the well is a little lower than the surface of the cemetery, and where there is a depression of the surface between the well and the cemetery? What would be the result upon a well ten rods from the cemetery with the same conditions as to surface?"

The communication was referred to Charles Francis, civil engineer, chairman of the Committee on Plumbing and Ventilation, who reported as follows:

"The committee, to which was referred the letter relating to the location of a cemetery near a well as being dangerous to health, would respectfully report: That it is the opinion of the committee that a well located within ten, twenty or one hundred rods of a cemetery, which well is expected to furnish water for domestic purposes, is exceedingly dangerous to those using the water, and a menace to the health of the neighborhood or community."

The following question was also submitted in the communication above referred to:

"Under what provision, if any, of the Code is given authority to private individuals to locate and maintain a public burying ground within the corporation of a city?"

The reply of the committee to this question was as follows:

"As to the provision of the Code which confers authority, if any is conferred, your committee is unable to say and would respectfully refer this portion of the communication referred to to the Attorney-General, a member ex officio of this Board, for his opinion."

The report was received and adopted.

AMERICAN PUBLIC HEALTH ASSOCIATION

The following report was submitted by the undersigned delegates and ordered placed on file:

GENTLEMEN:—As your delegates to the twenty-ninth annual meeting of the American Public Health Association, held at Buffalo, N. Y., September 17th to 20th, inclusive, we beg leave to report as follows:

The sessions were held in the theatrical rooms of the Seventy-fourth Regiment Armory, and the laboratory and bacteriological exhibits were made in the billiard parlors adjoining. No better quarters could have been secured in the city, and the thanks of the association are due the local committee for their untiring efforts in every way to add to the facilities for dispatching the business of the meeting, as well as furnishing all the comforts and pleasure possible for the ladies and gentlemen in attendance.

The pleasure of the meeting, however, was overshadowed by sadness and sorrow occasioned by the death of President McKinley, which made all feel as though they were attending a memorial service in honor of a deceased friend.

Free tallyhos were secured by the local committee for the pleasure of their guests, and those who accepted the courtesy did so in order that

they might be driven down Delaware avenue and shown, first, the Milburn house, upon which, through imagination, all the world had gazed the week before in hopes of the restoration to health of him whom all peoples had learned to love and respect, but who succumbed to the assassin's bullet, or, as we prefer to say, bowed to the inevitable, which he was pleased to accept as God's will, and died realizing "His will, not ours, be done." Then to the Wilcox home, where our beloved soldier and patriot, Theodore Roosevelt, took the oath of office and became President of the United States. The feelings of hatred of the damnable anarchistic principles which prompted the assassination, our love for our murdered President, and the principles of love and liberty for which he stood, together with the just pride we feel in our Teddy, are better felt than expressed.

In many particulars the meeting was the best in the history of the association. The reports of the standing committees (copies of which are presented herewith) were all excellent treatises of the subjects before the various committees. We will only mention the topics, as follows:

"Animal Diseases and Animal Foods."

"Transportation of Diseased Tissue by Mail."

"National Leper Homes."

"Pollution of Public Water Supplies."

"Etiology of Yellow Fever."

"Disposal of Refuse Materials."

"Relation of Forestry to the Public Health."

"Car Sanitation."

"Cause, Prevention and Duration of Infectious Diseases."

"Disinfectants and Disinfection."

"Public Health Legislation."

"School Hygiene."

To us the report of the committee on animal diseases and animal food, by the chairman of the committee, Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, Washington, D. C., was of greatest importance. We would recommend that all these committee reports be reproduced in the *Iowa Health Bulletin*, for the benefit of our readers.

The writer, in discussing the attitude of the association toward the question of restrictive measures for the prevention of tuberculosis, was instrumental in calling forth an expression from the association, which is embodied in the following resolutions which were unanimously adopted, and which represent the attitude of the most prominent sanitarians of Canada, Mexico and the United States:

Resolved, That notwithstanding the advances of sanitary science the mortality from tuberculosis continues to be appalling. It has been demonstrated that by the application of proper measures this mortality may be diminished rapidly and to a great degree. Therefore, every effort should be made by sanitarians to carry into effect all reasonable methods which have been shown by experience and research to be effective towards this end.

Resolved, That the increase of tuberculosis in cattle and swine, as shown by investigations of recent years and by meat inspection statistics,

is a serious matter from a commercial as well as sanitary point of view, and calls for more systematic attention from those responsible for the integrity of the food supply and for the protection of the public health.

Resolved, That this association is of the opinion that sufficient facts have not been offered by Professor Koch, or other investigators, to prove that human and bovine tuberculosis are different diseases. It is further of the opinion that the variability under different environment common to micro-organisms may, upon further investigation, be found sufficient to account for the differences that have been noted, and that the germs of these diseases may yet be proved to be closely allied or identical. Irrespective of the question of the communicability of bovine tuberculosis to man, the inspection of animals and premises is absolutely necessary in order

1. That the meat and milk of animals suffering from this and other constitutional diseases be not used as human food.

2. That the sanitary condition of dairies, stables, etc., as regards cleanliness, water supply and ventilation, may be maintained.

3. That the health of dairymen and other handlers be closely supervised to prevent the spread of diphtheria, scarlet fever, human tuberculosis, etc., through the milk supply.

Resolved, That this association, while desiring to express its positive opinion as to the importance of dealing with animals and their products, as indicated in the preceding resolutions, does, at the same time, insist upon the necessity for dealing with the still greater dangers now universally recognized, of the transmission of tuberculosis from one person to another by continued personal association through inhalation of the air of infected living rooms, the contamination of clothing, handkerchiefs and similar objects with sputum and other accretions, and would therefore urgently recommend that municipalities adopt regulations as follows:

1. Against expectoration on pavements and in other public places.

2. For the compulsory notification by physicians of cases of tuberculosis in order that literature may be supplied the householders and municipal aid given where necessary to lessen the dangers to the families of infected persons.

3. For the establishment of municipal sanatoria for the benefit of persons and families of limited means.

4. For the regular inspection of tenements, factories, workshops, schools, and other public institutions to promote cleanliness, ventilation and other sanitary conditions.

Next in importance came the discussion of yellow fever, and what has been accomplished in its prevention and eradication. Dr. Walter Reed, surgeon, U. S. Army, in his paper on "The Prevention of Yellow Fever," gave a detailed account of his work in Cuba and was able to maintain his theory of the spread of yellow fever by the bite of the mosquito, against all the theories presented by others. He gave a full account of their war on mosquitoes and proved his statements by the remarkable decrease in the number of cases following the destruction of mosquitoes in cisterns and cess pools of all kinds.

On Thursday, September 19th, the association met at 10 a. m., and adopted resolutions of condolence upon the death of President McKinley, and adjourned until Friday. The resolutions were seconded by Dr. Frederick Montizambert, Ottawa, Canada, who assured us that the death of the President was their loss as well as ours, and that the people of Canada mourned the sad event, and by Edwardo Liceaga, City of Mexico, Mexico, who assured us of the sympathy and sorrow felt by the people of our sister republic.

The next meeting will be held at New Orleans.

J. I. GIBSON,
C. B. ADAMS,
F. W. POWERS,
Delegates.

Dr. Shrader also announced that he was prepared to report the proceedings of the British Congress on Tuberculosis, which, however, was not presented for the reason above given.

On motion the Board adjourned to meet upon the call of the president.

FOURTH QUARTERLY MEETING, FEBRUARY, 1902

The fourth quarterly meeting of the Iowa State Board of Health convened at the office of the secretary, Capitol Building, February 5th, and was called to order at 10 A.M. by the President, Dr. A. M. Linn, Des Moines.

There were present Linn, McKlveen, Gibson, Adams, Powers and Dr. J. H. Sams, appointed to the vacancy occasioned by the retirement of Dr. J. C. Shrader. The minutes of the last regular and of the special meetings were read and approved, and also the quarterly report of the secretary, which was referred to appropriate committees.

The secretary presented the following tribute to the memory of Dr. E. M. Reynolds, which was ordered spread upon the minutes and published in the Health Bulletin:

In Memoriam

Ephraim M. Reynolds

Born, 1843

Died January 15, 1902

Dr. Ephraim M. Reynolds died at his home in Centerville. He was born in Wayne county, Indiana, and when six years old was brought by his parents to Appanoose county, Iowa. He attended the district schools in that county, and later Troy Academy, Davis county. When eighteen years of age he enlisted in Company I, Third Iowa Infantry. Returning from the army, he spent some further time at Troy academy, and thence went to California, where he taught school and studied medicine. He graduated in medicine in Cincinnati, Ohio, in 1870, and later took post-graduate courses at the College of Physicians and Surgeons, Keokuk, and at the Chicago Medical College. The doctor's entire professional life was in Appanoose county. He began practice in Centerville in 1873, where he has been in practice ever since. He served eight years as a member of the Iowa Legislature. The doctor was also a member of the American Medical Association, and of the Iowa State and Appanoose county societies, and had been a member of the Appanoose Board of Insane Commissioners for sixteen years.

He was appointed a member of the Iowa State Board of Health in 1880, and served with great fidelity and efficiency for the period of fourteen years. There was seldom a meeting of the Board, during that long period, that Dr. Reynolds was not present, and his voice and vote were ever in the interests of progressive sanitary measures. His genial manners, his conscientious devotion to duty, his excellent judgment and his large experience in legislative matters endeared him to all his associates on the Board, and his untimely removal from life's activities is not only a personal loss to his family and to his professional patrons, by whom he was so greatly beloved for his tender and successful professional ministrations, but to this Board and to his county and state as well.

HOSPITAL FOR INSANE, MT. PLEASANT

A communication was read by the Secretary complaining of the sewage from the Hospital for the Insane at Mt. Pleasant as being a nuisance and a source of danger to the township contiguous to its output, and asking the State Board of Health to give them relief. A committee was appointed, with Dr. Linn as chairman, to investigate and afford such relief as is possible.

TAMA INDIANS

Dr. Linn reported as to the condition of the Tama Indians relative to smallpox and read some communications relative thereto. He also read the following telegram from the Indian Commissioner:

Washington, D. C., February 4, 1902.

Replying to your telegram to Secretary Shaw. An item in urgent deficiency bill provides for funds to disinfect Indian camps, and for supplying them with new outfits. As soon as the bill passes the office will take action at once and asks your co-operation.

W. A. JONES.

In response to a telegram from Missouri Valley, Dr. Adams was directed to go there as early as possible and investigate conditions and assist in quarantine.

SMALLPOX AT ONSLOW

Dr. Matthey reported the following:

I desire to submit to your honorable body the following report on the condition of the smallpox epidemic existing at Onslow, Jones county:

In accordance with the request of the President of your Board, I visited the city of Onslow on the third day of February. In company with the physician of the local board of health, Dr. Knittle, I found over thirty cases distributed through ten families, which have now been placed under quarantine.

The original cases of the disease appeared soon after Christmas, 1901, and were of so mild a character that they were regarded by the attending physician as chickenpox.

In a meeting of the city council, acting as a board of health, the following measures were resolved upon:

1. To make vaccination a compulsory procedure among school children.
2. To strongly recommend vaccination as a protective measure to the public at large.
3. To close all schools, churches and places of public amusement and to forbid all public gatherings while the epidemic lasts.
4. To request all neighboring cities and townships to execute like measures and establish a strict quarantine on all existing cases.

Respectfully submitted,

H. MATTHEY.

U. S. MAIL SERVICE

Dr. Powers introduced the following, which was unanimously adopted :

WHEREAS, Cases of smallpox exist in nearly every county in this state; and,

WHEREAS, smallpox has occurred in the family or person of some of the postmasters of the state; therefore,

Resolved, That the Postmaster General be requested to require so far as possible all postmasters in Iowa and their employes, including city and rural carriers with their families, to be vaccinated, and to furnish to the local boards of their respective localities satisfactory evidence of successful vaccination.

SMALLPOX IN DES MOINES

Mr. Powers moved that the condition of Des Moines relative to smallpox be referred to a special committee for investigation and for consultation with the Attorney-General, Governor and city board of health as to what the powers of the Board are in cases where local boards are unable or unwilling to intelligently cope with the disease. The motion was adopted and Linn, Powers and McKlveen were appointed such committee. The following relative thereto was also adopted :

Be it Resolved, By the Iowa State Board of Health in conference assembled: That our committee appointed to confer with the local board of health of the city of Des Moines, and to make such investigation into the smallpox situation in said city as they deem wise be, and the same is hereby, directed that if after such conference or investigation the majority of the committee have reason to believe that the rules and regulations of the State Board of Health are not being enforced with such rigidity and efficiency as to prevent the further spread of this loathsome disease; and that should this disease appear to their minds to be likely to continue and to be a menace to the public health of our commonwealth on account of the city of Des Moines, said committee shall inform the local health authorities of said city in unequivocal terms that if after seventeen days probationary period a majority of this committee has reason to believe that the local authorities have demonstrated their failure to successfully cope with the situation, the President of the State Board of Health, upon receiving such information, shall convene the said Board in special session for a conference and for such action relative thereto as may be thought best for the public health.

GASOLINE LAMPS

The following gasoline lamps were passed as reasonably safe and their use permitted:

"F P. Lighting System," "Twentieth Century Light," "Acme Arc Vapor Lamp."

The following lamps had been previously approved:

"Standard Gas Lamp," "Standard Arc Lamp No. 39," "Efficient Vapor Lamp No. 2," "Efficient Vapor Lamp No. 6," "Sun Incandescent Vapor Gas Lamp," "Welsbach Incandescent," all styles.

"Turner Arc Pressure Lamp No. 10," "Little Wonder No. 20," "Delmar Vapor Lamp," "Improved Welsbach—Students' Lamp."

"Nulite Arc," "Bystrom Gas Lamp," "Corona," "Columbia," "Morey's No Mantle," "Grinnell Lamp," "Sterling Arc," "Sterling Gravity," "White Star," and "One Gallon Doran."

"The American Arc No. 2," "The Magic Arc," "The Magic Gravity," "The Solar Arc."

"The Simplicity style B," "The Efficient No. 6," "Pressure Arc Lamp No. 5 E," "New Century Lamp No. 50," "The Rockford X-Ray," "Omaha Automatic Gas Lamp," "The Columbian," and "The Imperial Lamp." "The M. & M. Arc," two styles, one for store and one for street, and the "No. 5 Special."

It is to be understood that the Board does not issue guarantees of safety for any of these lamps and does not specially commend any one as more than reasonably safe under proper care.

No gasoline lamp not having the approval of the Board, after due test and consideration, can be used in Iowa without violating the law and subjecting those using them to severe penalties.

VACCINATION BY INTERNAL REMEDIES

The committee to whom was referred the question of the approval by this Board of vaccination by internal remedies reported as follows:

Your committee to whom was referred the matter of vaccination by internal remedies beg leave to report: This method of vaccination is comparatively new. Its usefulness is not yet sufficiently determined to warrant your committee in endorsing it as an efficient method for preventing smallpox. We therefore ask that for the present the whole matter be laid upon the table. (Signed.)

A. M. LINN,

F. W. POWERS.

The report was received, the matter laid upon the table and the committee continued.

(Note—It may be proper to state here that thus far the deliberate action of the Board has been adverse to its use as a substitute for ordinary vaccination.—Secretary.)

SPECIAL DISINTERMENT PERMITS

The Board directed the Secretary to issue special disinterment permits as follows:

CARL CROUT, 1901, *membranous croup*, by private conveyance from one lot in Woodland cemetery, Des Moines, to another lot in same cemetery.

FLORENCE HURLEY, 1883, *diphtheria*, by private conveyance from Locust Grove cemetery, Locust Grove township, Fremont county, to Hamburg cemetery in the town of Hamburg.

VIRGIL HURLEY, 1877 *membranous croup*, same as foregoing.

PEARL HURLEY, *diphtheria*, 1883; same as preceding.

SYLVIA KAETSCHMER, *membranous croup*, 1897, by private conveyance from one lot to another in Linwood cemetery, Dubuque.

SPECIAL POWERS FOR BOARD

On motion Drs. Linn and Powers were instructed to confer with the Attorney-General relative to drafting a bill for consideration by the present general assembly empowering the State Board of Health, if it has not such authority now, to take charge of quarantine where infectious diseases exist, in cases where the local board of health refuses or neglects to comply with its rules and regulations and the public health is endangered thereby.

DR. J. C. SHRADER—TESTIMONIAL

The following testimonial was unanimously passed by a rising vote:

WHEREAS, The time draws near when we must sever the official relations which exist between this Board and our President, Dr. J. C. Shrader, it seems there can be no more fitting time than the present for us to convey to him our great appreciation of the valuable services that he has rendered this Board in the past. As the senior member of the Board, in point of years of service, he has been able to do much in its interests. As the presiding officer we have always found him just in his ruling, and, as a working member of this body, always ready and willing to perform the duties assigned to him. We feel that this Board will sustain a great loss by his absence. In the time that we have been connected with this Board we have formed strong ties of personal friendship with him that we trust may be continued. We wish him Godspeed in his future undertakings.

(Signed) C. B. ADAMS,
F. W. POWERS,
J. I. GIBSON,
A. M. LINN,
J. A. MCKLVEEN,
H. MATTHEY,
R. E. CONNIFF,

FINANCIAL

The Secretary submitted the following itemized report of expenditures for the quarter ending January 31, 1902; which was received and referred to the auditing committee:

Board meeting, November 21, 1901

MEMBERS' EXPENSE ACCOUNT

J. C. Shrader	\$ 26.76
H. Matthey	32.50
R. E. Conniff	36.00
C. B. Adams	27.71
J. A. McKlveen	25.32
J. I. Gibson	31.58
A. M. Linn	15.00
Chas. Francis	32.80
F. W. Powers	27.70
Total	\$255.37

Paid by State Warrant No. 11564.

CURRENT EXPENSE ACCOUNT, NOVEMBER, 1901

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
F. W. Powers, investigating smallpox	35.95
J. C. Shrader, investigating smallpox	16.54
American Public Health Association, transportation	3.00
American Public Health Association, fee, 1901	5.00
American Vet. Review, subscription	3.00
Popular Science News, subscription	1.60
Babyhood, subscription	1.00
Langan Bros., 2,000 pamphlets, envelopes	3.30
U. S. Postal Guide	2.00
Health Publishing Co., subscription	1.00
Popular Science Monthly, extras	.50
Adams Express Co	1.15
U. S. Express Co	.35
Wells Fargo & Co., express	3.61
Total	\$243.00

Paid by State Warrant No. 11622.

CURRENT EXPENSES, DECEMBER, 1901

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
Puck Mfg. Co., printing Circular No. 8	100.00
Meyers & Tucker, printing and mailing <i>Bulletin</i>	61.94

J. F. Kennedy, telegrams and street car, 1901	5.04
R. E. Conniff, telegraph and telephone	4.60
Munn & Co., Scientific American	5.00
American Vet. Review	3.25
Postal Telegraph Co.	2.27
Municipal Engineering Co., magazine	2.00
Puck Manufacturing Co., envelopes	1.75
Adams Express Co.	1.40
American Express Co.	.55

Total \$352.80

Paid by State Warrant No. 12361.

Special board meeting, January 15, 1902

MEMBERS' EXPENSE ACCOUNT

J. C. Shrader	\$ 22.28
J. A. McKlveen	16.80
R. E. Conniff	34.75
J. I. Gibson	27.08
C. B. Adams	20.46
H. Matthey	29.50
F. W. Powers	19.70
A. M. Linn	5.00

Total \$175.57

Paid by State Warrant No. 12686.

CURRENT EXPENSE ACCOUNT, JANUARY, 1902

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
Koch Printing Co., binding	72.85
Meyers & Tucker, printing and mailing <i>Bulletin</i> , December	59.55
Louis Schooler, postage stamps	15.00
Iowa Printing Co., 300 reprints	10.95
J. C. Shrader, Com. expenses as per bill	12.53
W. H. Hoskins, Journal	3.00
Gertrude Kennedy, services in office	2.00
Adams Express Co.	2.20
U. S. Express Co., November	.85
U. S. Express Co., December	2.20

Total \$346.13

Paid by State Warrant No. 12928.

Total expenditures for the quarter	\$1,372.87
October expenditures	691.90

Total paid from appropriation \$2,064.77
 Leaving unexpended \$2,935.93

REPORT OF AUDITING COMMITTEE

Your Auditing Committee, to whom was referred the foregoing report of the Secretary, would respectfully report that we have carefully examined the same and find it to be correct in every particular, and that proper vouchers are on file for each item of expenditure.

Respectfully submitted,

(Signed)

H. MATTHEY,
Committee.

LEGISLATION

Considerable time of the meeting was taken up in consulting with members of the legislature and with each other relative to some important change in the law, and especially with a view of establishing a well-equipped bacteriological laboratory.

On motion the board adjourned to meet in May unless sooner convened by the President.

ANNUAL MEETING, MAY, 1902

The State Board of Health convened in regular annual session at the office of the Secretary, capitol building, May 14th, and was called to order at 10 A. M., by President A. M. Linn, Des Moines.

There were present Linn, McKlveen, Conniff, Francis, Adams, Sams, Powers and Paul O. Koto, Forest City, State Veterinary Surgeon. Dr. Koto succeeds Dr. J. I. Gibson, whose term of service had expired.

The minutes of the Secretary were read and approved. The Secretary submitted his quarterly report which was received and assigned to the respective committees.

The report contained the following respecting

INFECTIOUS DISEASES

While during the months of February and March there were an unusual number of outbreaks of infectious diseases, especially smallpox, reported, there has been during the month of April quite a subsidence which is notably increasing. It is painfully apparent, however, that in many localities there are many physicians and health authorities who are, through ignorance, prejudice or neglect lacking in the application of those means that science and the law have prescribed as the only reliable measures for preventing or restricting the spread of these diseases. There are yet in Iowa physicians who call smallpox Cuban itch or chickenpox even in the face of consulting physicians who would seek to put them right.

The bill passed by the last General Assembly granting this Board authority to go into communities where such conditions prevail will contribute mightily towards the adoption and enforcement of proper sanitary measures. It will greatly contribute to the correction of the errors of diagnosis referred to and render these occurrences less frequent.

One of the most important and impressive object lessons during the quarter, from a sanitary point of view, was the very thorough and successful disinfection of the Indians in Tama county by your efficient president, Dr. Linn. Few have any idea of the difficulties encountered within and without the camp in the prosecution of this work; nor of the magnitude of the undertaking. A detailed history of this outbreak of smallpox among these, our unfortunate wards, together with a detailed account of the means of disinfection and the result of the same would prove

highly interesting to the readers of the *Bulletin*, and a valuable chapter to our next biennial report. Of course no one could do this so well as your President.

The following communication was laid before the Board:

Chicago, April 8, 1902.—J. F. Kennedy, M. D., Secretary Iowa State Board of Health. Dear Sir: If you can through your official connection with the State Board bring up the question of dietetics, physico-mechanical therapeutics and hydro-therapy, I would ask you if it would be possible for you to introduce the following resolution at the next meeting?

Resolved, That we are in favor of introducing into the medical schools of the United States the practical teaching of the three subjects: dietetics, physico-mechanical therapeutics and hydro-therapy.

The communication was placed in the hands of Drs. Powers and Sams who reported in favor of the resolution and it was adopted unanimously.

PERSONAL

Dr. Conniff introduced the following which was unanimously adopted by a rising vote.

WHEREAS, the services of our associate, Dr. J. I. Gibson, late State Veterinarian, as a member of this Board have ended by expiration of his term, and

WHEREAS, we the members of the State Board of Health recognize in Dr. Gibson an able and conscientious member, therefore,

Resolved, That we express to Dr. Gibson our appreciation of the valuable services he has rendered the state while a member of this Board.

MT. PLEASANT SEWAGE INVESTIGATION

The committee appointed to investigate the complaint made by the trustees of Center township, Henry county, relative to the disposal of the sewage from the Hospital for the Insane at Mt. Pleasant, made the following report:

Your committee appointed to investigate the complaint of the trustees of Center township relating to the nuisance created by the discharge of the sewage of the Insane Hospital at Mt. Pleasant into the creek that runs through the township, beg leave to report as follows:

The committee visited the location of the alleged nuisance and found that there was abundant cause for complaint as the discharge of the sewage of the hospital into the creek had already created a nuisance of a very dangerous character.

Your committee, however, found by investigation and inquiry that the State Board of Control had taken this matter in hand and would construct during the present season a septic tank with the necessary filters or some equally efficient system of disposing of the sewage of the Mt. Pleasant Insane Hospital, and an appropriation had been made for this purpose by the legislature at its last session.

In view of these facts your committee would respectfully recommend that the trustees of Center township, Henry county, be informed by the Secretary of the State Board of the contemplated action of the State

Board of Control in relation to the construction of a sewage disposal system for the Mt. Pleasant Insane Hospital, after obtaining the official notice or information from the State Board of Control that the above mentioned action is to be carried out this season and the nuisance complained of, abated.

Respectfully submitted,

CHARLES FRANCIS,

A. M. LINN,

Committee.

The report was received and adopted.

TAMA INDIANS

Dr. Linn made an interesting report of his experiences and observations, as well as the methods used by him in disinfecting the camp, as well as an itemized statement of the expenditures. The report was received with marked attention and interest by the board and his actions heartily approved.

GASOLINE LAMPS

The Committee on Gasoline Lamps recommended for approval "The American Lamp," and "The Overhead Generator Automatic Gas Lamp." The report was adopted and the lamps approved as contemplated by law.

The following is a complete list of the lamps approved by the Board, including the two above named:

June Meeting, 1900—

"Welsbach," gravity, underneath burner; "M. & M.," air pressure;

"Special No. 5," gravity, overhead generator, "New Century," gravity, underneath generator.

August Meeting, 1900—

"X Ray," gravity, underneath generator; "Omaha Automatic;" "Standard," gravity, underneath generator; "Columbian;" "Imperial," gravity, underneath generator.

November Meeting, 1900—

"Simplicity," gravity, overhead generator; "Efficient No. 6," air pressure; "No. 5 E," air pressure.

December 18th Meeting, 1900—

"American No. 2," air pressure; "Magic," air pressure; "Magic," gravity, overhead generator, "Solar, No. 36," air pressure.

May Meeting, 1901—

"Bystrom," gravity, underneath generator; "Nulite," gravity, underneath generator; "Corona," gravity, underneath generator; "Columbia;" "No-Mantle," gravity, gasometer generator; "Sterling White Light," gravity, underneath generator; "Sterling Air Pressure;" "Grinnell" lamp, gravity, underneath generator; "White Star," gravity, underneath generator; "One-Gallon Doran," air pressure.

August Meeting, 1901—

"Turner No. 20," air pressure, and "Little Wonder," air pressure; "Welsbach Improved;" "Delmar."

November Meeting, 1901—

"Standard," air pressure, "Efficient No. 6," air pressure; and "Efficient No. 2," gravity and air pressure combined, overhead generator; "Sun," gravity, overhead generator.

February Meeting, 1902—

"Twentieth Century Lighting Machine," underneath generator; "F. P. Lighting Machine," "Acme," air pressure.

SPECIAL DISINTERMENTS

The committee on "Corpses" recommended the issuance] of the following special disinterment permits. The recommendation was adopted and the Secretary directed to issue the same:

HANNAH MARIE BECKSTROM, *diphtheria*, 1895, by private conveyance, from Swan Lake cemetery, Laurens, to East cemetery in Swan Lake township.

NOMIE VICTORIA ELINORE BECKSTROM, *membranous croup*, 1895, by private conveyance from Swan Lake cemetery, Laurens, to East cemetery in Swan Lake township.

NORA BELL COONS, *scarlet fever*, 1882, by private conveyance from Hazelwood cemetery, Grinnell, to a lot in Odd Fellows' addition to the same cemetery.

FRANK DINUZZIO, *diphtheria*, 1902, from one lot to another in St. Ambrose cemetery, Des Moines.

ANDY IVERSON FEDSON, *croup*, 1886, from the N. E. Lutheran Congregation cemetery, St. Ansgar, to a lot in the St. Ansgar City cemetery.

LOUIE JANE HAMMER, *membranous croup*, 1872, from one lot to another in Friends cemetery, Kellogg township, Jasper county.

ANNA HELLMAN, *diphtheria*, 1890, by private conveyance from Germantown cemetery, Caledonia township, to Prairie View cemetery, Union township, same county.

ANNA HOLUB, *diphtheria*, 1888, from Oxford Junction cemetery to Wyoming cemetery in the town of Wyoming.

D. KEINTZ, *diphtheria*, 1879, from the Keintz cemetery, Clear Creek township, Jasper county, by private conveyance to Collins cemetery in the town of Collins.

EDITH LAW, *scarlet fever*, 1880, by private conveyance from Lincoln cemetery, Lincoln township, Cerro Gordo county, to Elmwood cemetery, Mason City.

JOHN PETER LEY, *diphtheria*, 1901, from St. Mary's cemetery, Remsen, to St. Joseph cemetery, LeMars, by private conveyance.

WILLIAM NEWMAN, *scarlet fever*, 1887, from one lot to another in Woodland cemetery, Des Moines.

ELCENAY IRENA ORR, *diphtheria*, 1862, from one lot in Greenwood cemetery, Muscatine, to another lot in the same cemetery.

HELEN ROBOSKY, *diphtheria*, 1901, from Oak Hill cemetery, Cedar Rapids, to another lot in the same cemetery.

JOHN KOBUS, *croup*, 1892, from Senti cemetery, Burlington, to Aspen Grove cemetery in the same city.

HAROLD BARNES SHEEBURNE, *diphtheria*, 1902, Fairview cemetery, Waterloo, to Linwood cemetery, Clarksville.

JACOB LYLER WOODWARD, *diphtheria*, from Avery cemetery, Union township, Des Moines county, to Aspen Grove cemetery, Burlington.

STATE CONTROL

Under the new law authorizing the State Board of Health to go into districts, townships or incorporated towns to establish, maintain and release quarantine, and otherwise assume all the lawful functions of a local board, Dr. Linn as President of the Board in three localities of the State, deputized parties to represent the State Board and the practical results were most excellent and fully demonstrated the wisdom of the legislature in vesting this Board with such added power.

When local boards refuse or neglect for any reason to discharge their duties as health officers, under the law the State Board can step in, and the cost of services on the part of said Board must be paid by the local board as though incurred by them.

FINANCIAL

The Secretary presented the following financial statement for the quarter, which was received and referred to the Auditing Committee:

Board Meeting, February, 1902.

MEMBERS' EXPENSE ACCOUNT

J. I. Gibson	\$ 33.08
J. H. Sams	31.32
J. A. McKlveen	27.35
C. B. Adams	31.46
H. Matthey	34.00
F. W. Powers	29.20
A. M. Linn	20.00
Total	\$206 41
Paid by State Warrant No. 13423.	

CURRENT EXPENSES, FEBRUARY, 1902

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
Talbot-Koch Printing Co., Clr. No. 1	89.00
A. M. Linn, investigating smallpox	35.53
J. A. McKlveen, investigating smallpox	22.10
Geo. A. Miller Printing Co., 5,000 blanks	12.75
The Sanitarian, subscription (1902)	4.00
U. S. Express Co	2.94
Western Union Telegraph Co	4.14
Mutual Telephone	3.30
Wells Fargo & Co., express	.35
Total	\$339.11
Paid by State Warrant No. 13953.	

CURRENT EXPENSES, MARCH, 1902

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
Meyers & Tucker, <i>Bulletin</i> , January and February	119.14
Geo. A. Miller Printing Co., marriage blanks	36.50
Geo. A. Miller Printing Co., circulars	5.50
C. B. Adams, investigating smallpox	6.56
Puck Mfg. Co., disinterment blanks	6.00
Puck Mfg. Co., 3,000 envelopes	2.50
Iowa Litho. Co., 500 letterheads (Linn)	8.00
Postage stamps, Louis Schooler	75.00
Western Union Telegraph Co	4.99
Adams Express Co	.30
U. S. Express Co	.55
Total	\$430.04
Paid by State Warrant No. 15172.	

CURRENT EXPENSES, APRIL, 1902

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
Lewis Schooler, stamps and envelopes	30.00
Smith Premier Typewriter Co., repairs	7.20
Puck Mfg. Co., Circular No. 8	26.00
Domestic Engineering, subscription	2.00
Adams Express Co	2.10
American Express Co	.36
U. S. Express Co	4.23
Adams Express Co	2.00
Wells Fargo & Co., express	.32
Western Union Telegraph, March	1.43
Western Union Telegraph, April	1.22
Total	\$241.86
Paid by State Warrant No. 16363.	

RECAPITULATION

Board meeting	\$206.41
Current expenses, February	339.11
Current expenses, March	430.04
Current expenses, April	241.86
Total	\$1,217.42
January 31st, appropriation unexpended	\$2,935.93
Less	1,217.42
Balance unexpended	\$1,718.51

REPORT OF AUDITING COMMITTEE

Your committee, to whom was referred the foregoing report of the Secretary, would respectfully report that we have carefully audited the same and have found it correct in every particular.

Respectfully submitted,

(Signed)

H. MATTHEY,
Committee.

The report was adopted.

ELECTION OF OFFICERS

Dr. A. M. Linn was re-elected President and Dr. J. F. Kennedy, Secretary.

Margaret S. Schoonover was re-elected Stenographer; Dr. Eli Grimes, Bacteriologist, and Prof. S. R. Macy, Chemist.

On motion Board adjourned to meet in August upon call of the President.

SECOND QUARTERLY MEETING—AUGUST, 1902

The State Board of Health met in regular quarterly session at the office of the Secretary and was called to order by the President, Dr. A. M. Linn, at 3 p. m., August 6th.

There were present Linn, Adams, Powers, McKlveen, Matthey and Francis.

The minutes of the last meeting were read by the Secretary and approved.

INFECTIOUS DISEASES

The Secretary reported the following relative to infectious diseases:

For the last quarter, ending July 31st, there have been reported outbreaks of infectious diseases as follows:

Diphtheria: In May, 11 localities; June, 11; July 7. Total, 29.

Scarlet fever: May, 12; June, 15; July, 8. Total, 35.

Measles: May, 5; June, 2; July, 1. Total, 8.

Smallpox: May, 37; June, 63; July, 25. Total, 125.

Typhoid fever: May, 1; June, 3; July, 3. Total, 7.

Whooping cough: May, 2; June, 2; July, 1. Total, 5.

For the last quarter, ending July 31st, there have been reported outbreaks of infectious diseases as follows:

Daily reports have been made to this office from the health department in Des Moines and it is a satisfaction to report that there is no case of smallpox at present within the city limits nor has there been for several weeks past. In the case of smallpox above reported there seems to be no disposition for the disease to spread, because of the prompt measures taken to stamp it out supplemented by better atmospheric conditions.

VARIOLINUM

The question of the internal use of "variolinum" as a substitute for vaccination by scarification was called up.

The following resolution was introduced and its adoption moved:

Resolved, By the Iowa State Board of Health, that vaccination for immunization against smallpox is defined as: An inoculation by scari-

fication of the epidermis to the derma and an immediate application thereto of sterile bovine virus, producing in a reasonable time the typical vaccine vesicle and resultant scar, with the associating constitutional symptoms common to such an application.

The resolution was made the special order for the afternoon of the first day of the next meeting.

FINANCIAL

The Secretary presented the following financial statement for the quarter ending July 31, 1902:

Board meeting, May, 1902.

MEMBERS' EXPENSE ACCOUNT

F. W. Powers	\$ 21.70
J. A. McKlveen	19.80
P. O. Koto	25.82
C. B. Adams	24.96
R. E. Conniff	33.50
Chas. Francis	25.00
A. M. Linn	10.00
J. H. Sams	16.49
Total	\$177.27

Paid by State Warrant No. 16543.

CURRENT EXPENSE ACCOUNT, MAY, 1902

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
Meyers & Tucker, printing and mailing <i>Bulletin</i>	79.35
L. Schooler, postage	40.00
C. B. Adams, investigating smallpox	9.82
R. E. Conniff, telegraph and telephone	6.35
Fuck Mfg. Co., envelopes	2.00
Puck Mfg. Co., envelopes	1.25
Chas. Francis, visiting Mt. Pleasant	18.00
Popular Science Monthly, 1902	3.00
Am. Vet. Review, 1902	3.00
U. S. Express Co	1.85
Wells Fargo & Co., express	.95
Total	\$330.57

Paid by State Warrant No. 16986.

CURRENT EXPENSE ACCOUNT, JUNE, 1902

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
Meyers & Tucker, printing <i>Bulletin</i>	64.00
B. Murphy, printing June <i>Bulletin</i>	64.80
A. M. Linn, delegate to New York	98.05
A. M. Linn, investigating, Mt. Pleasant	11.75
A. M. Linn, telephone and stenographer	5.81
Puck Mfg. Co., billheads	4.00
Langan Bros., Manila tissue	.75
Western Union Telegraph Co	2.94
American Express Co	.50
U. S. Express Co	1.47
Total	\$419.07
Paid by State Warrant No. 17724.	

CURRENT EXPENSE ACCOUNT, JULY, 1902

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
Talbot-Koch Printing Co., binding	61.10
Puck Mfg. Co., <i>Bulletin</i> , mailing list, etc	89.00
Iowa Lith. Co., letterheads	25.50
B. Murphy, July <i>Bulletin</i>	69.00
Des Moines Paper Box Co., tubes	2.00
L. Schooler, <i>Bulletin</i> postage	25.00
Gertrude Kennedy, services in office	14.00
Buck Bros., brush and paste	.65
Adams Express Co., May and June	3.30
American Express Co., June	1.70
U. S. Express Co., June	2.30
Wells Fargo & Co., express, May	.85
Total	\$459.40
Paid by State Warrant No. 18344.	

RECAPITULATION

Board meeting	\$177.27
Current expenses, May	330.57
Current expenses, June	419.07
Current expenses, July	459.40
Total for quarter	\$1,386.31
Previously expended	3,282.19
Total	\$4,668.50

Leaving unexpended of the appropriation for August and September \$331.50.

The report was referred to the Auditing Committee, which reported as follows:

Your Auditing Committee would respectfully report that we have examined the foregoing report and find it correct.

Respectfully submitted,

H. MATTHEY,

Chairman of Committee.

The report of the committee was adopted.

DISINTERMENT PERMITS

The Secretary reported the following:

Immediately after the adjournment of the Board I issued the seventeen disinterment permits as authorized. From the first day of May until the 31st of July there were issued 156 ordinary permits from the office. The attached applications are respectfully referred to your Board for special action, the cause of death being from prohibitive infective diseases:

GEORGIA ALBRIGHT, age 5 years, 1878, *membranous croup*, from Washburn cemetery, Cedar township, Black Hawk county, to Mount Vernon, cemetery, Vernon township, same county, for reinterment.

HARVEY BAILEY, age 2 years, *diphtheria*, 1883, from Grant township cemetery, Hardin county, to Hubbard cemetery, in the town of Hubbard.

THEODORE TARTLTON BAILEY, age 3 years, *diphtheria*, 1881, removal same as foregoing.

LENA BUNTE, age 6 years, *diphtheria*, 1892, from one lot to another, in the cemetery of the town of Rock Rapids.

CARL BUNTE, age 2 years, *diphtheria*, 1892, same disposition as foregoing.

HARRY CLEVELAND, age 13 years, *diphtheria*, 1897, from one lot to another in Aspen Grove cemetery, Burlington.

BLANCHE DEMPSEY, age 10 months, *scarlet fever*, 1890, from Lincoln cemetery, Lincoln township, Cerro Gordo county, to the cemetery in the town of Clear Lake.

PHOEBE BELL DEMPSEY, age 2 years, *scarlet fever*, 1890, same as the foregoing.

ALTON EARL, age 20 years, *scarlet fever*, 1874, from abandoned cemetery in Chester township, Howard county, to Chester Hill cemetery in same township.

PETER FABER, age 4 years, *diphtheria*, 1891, from Waveland cemetery, Prairie City, to another lot in same cemetery.

ALPHEUS SHAW HOLDEN, age 19 years, *scarlet fever*, 1902, from one lot to another in Oak Hill cemetery, Troy township, Iowa county.

FRANK CHESLEY HOWARD, age 9 years, *scarlet fever*, 1894, from one lot to another in Strawberry Point cemetery in the town of Strawberry Point.

NELLIE MAY JOHNSON, age 1 year, *scarlet fever*, from Woodland cemetery, Des Moines, to Greenwood cemetery, Douglas township, Polk county.

GUVERNEUR MAYER, age 3 years, *scarlet fever*, 1873, from one lot to another in Woodland cemetery, Des Moines.

ALACE LUCETTA PARKHURST, age 9 years, *scarlet fever*, 1889, from Knowlands cemetery, Princeton township, Scott county, to Le Claire cemetery in the township above named.

JESSE H. POWELL, age 4 years, *scarlet fever*, 1881, from York Prairie cemetery, Center township, Cedar county, to Masonic cemetery, Tipton.

All the foregoing were to be removed by private conveyance.

The Committee on Corpses reported in favor of the disinterments under the special conditions required in such cases.

VITAL STATISTICS

The Secretary made the following statement and suggestions which were duly approved by the Board.

Your attention is respectfully called to the fact that the report of vital statistics—births, marriages and deaths—have been accumulating for twenty-two years. They are bound in large volumes and the resources of this office are sorely taxed to accommodate them. Mr. Aldrich, the Curator of the Historical Department, would be glad to accept of them and appropriately display them for all time to come, including any subsequent volumes that are bound by this office. As births, marriages and deaths constitute the most important events of any person, and as these reports afford a personal history of several hundred thousand individuals of Iowa, it seems to me eminently proper that their final depository should be with the Historical Department of the State. There is nothing in the law requiring them to be kept in this office. The duty of this Board being simply to supervise their registration. I would be glad to have you authorize me to dispose of those on hand and subsequent volumes as bound as above suggested.

DELEGATES

Drs. Powers and Adams and Col. Francis were elected delegates to the Pan-American Sanitary Congress to be held in Washington; Dr. Matthey was elected delegate to the Conference of Provincial and State Boards of Health to be held in New Haven, Connecticut, and Drs. Linn and McKlveen to the meeting of the American Public Health Association to be held in New Orleans, La.

On motion the Board adjourned to meet first Thursday in November, unless otherwise ordered by the President.

SEMI-ANNUAL BOARD MEETING, SEPTEMBER, 1902.

The Iowa State Board of Health met at the office of the Secretary, Capitol Building Des Moines, November 5, 1902, and was called to order by Dr. A. M. Linn, Des Moines, President.

There were present Linn, McKlveen, Sams, Francis, Adams, Koto, Powers and Conniff. The minutes of the last meeting were read and approved. The Secretary submitted a report for the quarter ending October 31, 1902.

INFECTIOUS DISEASES

The Secretary reported that outbreaks of infectious diseases were reported during the quarter as follows:

Diphtheria. (Aug.) Des Moines; Boone; Lee; Ft. Madison. (Sept.) McKee Twp., Allamakee County; Des Moines; Maynard; Modale; Swan Lake Twp., Emmet County; Waverly; Ashton; Davenport; Marion Twp., Plymouth County; Winfield; Wayne Twp., Henry County; Allison Twp., Osceola County. (Oct.) Des Moines; Hedrick; Battle Twp., Ida County; Low Moor; Wapello; Waverly; Linn Grove; Sibley; Colesburg and Guttenberg.

Measles. (Aug.) Ft. Madison. (Sept.) Montrose.

Scarlet Fever. (Aug.) Zearing; Des Moines; Allerton; Ft. Madison; Grant Twp., Buena Vista County. (Sept.) Farragut; Jefferson Twp., Warren County; Des Moines; Elk Creek Twp., Jasper County; Zearing, Washington Twp., Harrison County; Iowa City; Davenport. (Oct.) Des Moines; Hedrick; Iowa City; Garfield Twp., Mahaska County; Ottumwa; Cook Twp., Sac County; Vinton; Center Twp., Fayette County; Battle and Griggs Twp., Ida County; Mapleton; Vall; Wapello; Winterset; Sibley; Iowa Twp., Cedar County.

Smallpox. (Aug.) Dow City; Lake Park; Peterson; Allerton; Alton; Ft. Madison; Unionville; Logan Twp., Ida County; Settlers Twp., Sioux County; Woodland; High Point Twp., Lucas County. (Sept.) Davenport; Marion; Bayard; Grandview; Hopkington; Union and Delhi Twps., Delaware County; Iowa City. (Oct.) Byron Twp., Buchanan County; Iowa City; Dodge Twp., Dubuque County; Meadow Twp., Clayton County; Almoral; Melvin; Clinton; Mt. Hamil; Penn Twp., Johnson County; Fairbank; Bonaparte; North Liberty; Turin; Mapleton; Wapello; Harrisburg Twp., Van Buren County; Winterset; Dyersville; Washington County; Winneshiek County; Indianola.

Typhoid Fever. (Aug.) Ft. Madison. (Sept.) Des Moines; Douglas Twp., Adams County; Ottumwa; Colfax Twp., Grundy County; Waterloo; Davenport; Bradgate. (Oct.) Ottumwa; Pulaski; Des Moines.

Whooping Cough. (Aug.) None. (Sept.) Douglas Twp., Adams County. (Oct.) Scranton and Ottumwa.

SPECIAL DISINTERMENT PERMITS

The following special disinterments and reinterments were approved:

ANNIE BITTER, age 3 years, *diphtheria*, 1886, from one lot to another in St. Mary's cemetery, Dubuque.

JAMES CALVIN BLYTHE, age 3 years, *membranous croup*, 1884, from Ottawa cemetery, Jackson township, Clarke county, to Woodburn cemetery, town of Woodburn.

HENRY DICKINSON, age 11 years, *diphtheria*, 1888, from Riverton cemetery, Riverton township, Floyd county, to Oak Hill cemetery, town of Nashua.

LEONARD DICKINSON, age 14 days, *croup*, 1882, same as foregoing.

ESTHER CHRISTINA GUSTAFSON, age 6 years, *diphtheria*, 1890, from one lot to another in Woodland cemetery, Des Moines.

DALTON BINGHAM MANLEY, age 5 years, *diphtheria*, 1890, from Clinton township cemetery in Sac county to Early cemetery, town of Early.

MARY C. MILLER, age 4 years, *croup*, 1887, from one lot to another in Woodland cemetery, Des Moines.

EVA NELSON, age 1 year, *croup*, 1882, from Larson cemetery, Douglas township, Adams county, to Walnut Grove cemetery in the city of Corning.

SOPHIE SCHWARTZ, age 5 years, *croup*, 1894, from St. John's cemetery, Dubuque, to another lot in same cemetery.

JACOB WALTERS, age unknown, cause of death unknown, from one lot to another in Walnut Grove cemetery, Corning.

JOHN WINGERT, age 4 years, *scarlet fever*, 1887, from York Prairie cemetery, Center township, Cedar county, to Masonic cemetery, Tipton.

All the foregoing were to be disinterred in compliance with specified conditions and were to be removed by private conveyance to place of reinterment.

GASOLINE LAMPS

The attention of the Board was called to the fact that gasoline lamps were being sold and used in the state in defiance of the law relating thereto. The Secretary was directed to ascertain the facts relating thereto and report at next meeting.

The following additional lamps were approved by the Board:

The following additional lamps were approved by the Board:

"One Minute" Light, Model No. 9; "Models 206 and 212;" "The Canton Arc," and "The Bystrom Arc Lamp."

The following lamps had been previously approved:

June Meeting, 1900—

"Welsbach," gravity, underneath burner; "M. & M." air pressure; "Special No. 5," gravity overhead generator; "New Century," gravity, underneath generator.

August Meeting, 1900—

"X-Ray," gravity, underneath generator; "Omaha Automatic;" Standard," gravity, underneath generator; "Columbian;" "Imperial," gravity, underneath generator.

November Meeting, 1900—

"Simplicity," gravity, overhead generator; "Efficient No. 6," air pressure; "No. 5 E," air pressure.

December 18th Meeting, 1900—

"American No. 2," air pressure; "Magic," air pressure; "Magic," gravity, overhead generator; "Solar, No. 36," air pressure.

May Meeting, 1901—

"Bystrom," gravity, underneath generator; "Nulite," gravity, underneath generator; "Corona," gravity, underneath generator; "Columbia;" "No-Mantle," gravity, gasometer generator; "Sterling White Light," gravity, underneath generator; "Sterling air pressure;" "Grinnell Lamp," gravity, underneath generator; "White Star," gravity, underneath generator; "One-Gallon Doran," air pressure.

August Meeting, 1901—

"Turner No. 20," air pressure, and "Little Wonder," air pressure; "Welsbach Improved;" "Delmar."

November Meeting, 1901—

"Standard," air pressure; "Efficient No. 6," air pressure; and "Efficient No. 2," gravity and air pressure combined, overhead generator; "Sun," gravity, overhead generator.

February Meeting, 1902—

"Twentieth Century Lighting Machine," underneath generator; "F. P. Lighting Machine;" "Acme," air pressure.

May Meeting, 1902—

"The American Lamp" and "The Overhead Generator Automatic Gas Lamp."

CIRCULAR NO. 3

The Secretary was directed to have a third edition of Circular No. 3 printed. It relates to Infectious Diseases in the Public and Private Schools of Iowa—the edition to consist of six thousand copies.

PERSONAL

Dr. Conniff offered the following resolution, which was unanimously adopted:

WHEREAS, The term of service of our esteemed colleague, Dr. A. M. Linn, as a member of the Board is about to expire by limitation, therefore,

Be it Resolved, That the Iowa State Board of Health hereby testifies with great pleasure to his faithful and efficient labors in connection with this Board. He has always proved himself deeply interested in all the affairs of the Board, he has been able in judgment, prompt in action, capable as a sanitarian, courteous in manner, and in every way not only endeared himself to his colleagues, but has shown himself a valuable as well as faithful public servant; and it is with great regret that the time of our official separation is so near at hand.

CONFERENCE OF STATE AND PROVINCIAL BOARDS OF HEALTH OF NORTH AMERICA

The Secretary presented the following report:

The seventeenth annual meeting of the above organization was held in North Sheffield Hall, Yale University, New Haven, Connecticut, October 28th and 29th. There were thirty-four present representing Ontario, Canada, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Delaware, Pennsylvania, Ohio, Indiana, Michigan, Wisconsin, Illinois, Iowa, South Carolina, Louisiana, Cuba, and the U. S. Army and Navy. The conference embraces Canada, the United States of America, Republic of Mexico and the Republic of Cuba—the last being admitted at this meeting. The officers of the conference were: President, H. M. Bracken, Minnesota; Vice President, R. H. Lewis, North Carolina; Secretary, G. T. Swarts, Rhode Island; Treasurer, J. A. Egan, Illinois. The meeting was a very industrious one and quite a good deal of important work was accomplished.

COMMUNICABLE DISEASES

A committee had been appointed at the last meeting to report a list of diseases believed to be communicable, dangerous to the public health and such as boards of health may properly endeavor to prevent or restrict. This committee made its report, which was amended so as to embrace the following:

Actinomycosis (Lump Jaw); Anchylostomiasis (Tropical Anemia); Anthrax Beri-beri (epidemic neuritis); Bubonic Plague; Chicken Pox (Varicella); Cholera Asiatic (Cholera, Epidemic Cholera); Diphtheria (Croup, Membranous Croup); Epidemic Cerebro-Spinal Meningitis (Spotted Fever); Epidemic Dysentery; Erysipelas; German Measles (Rotheln); Glanders; Gonorrhœa; Hydrophobia (Rabies); Health Influenza (Grip); Leprosy; Malaria (Intermittent, Remittent or Pernicious Fever); Measles (Rubeloe, Morbilli); Mumps (Epidemic Parotitis); Pneumonia (Lobar or Croupous Pneumonia); Puerperal Fever (Puerperal Septicæmia); Scabies (Itch); Scarlet Fever (Scarlatina, Canker Rash); Smallpox (Variola, Varioloid); Syphilis; Tetanus; Trachoma; Trichinosis; Tuberculosis; Typhoid (Enteric) Fever; Typhus (Ship) Fever; Whooping Cough (Pertussis); Yellow Fever.

The report as amended was adopted. The alphabetical order observed in the above list does not represent the relative importance of the diseases named so much as convenience for reference.

CONSTITUTION

A constitution was adopted. In as much as it had struggled along for sixteen years without any constitution whatever, it is hoped that being thus essentially equipped the conference may become more robust and hence more efficient in deeds as well as in resolutions.

The name adopted is as given above. The membership consists of executive officers of state and provincial boards of health and delegates appointed by such boards to attend its meetings.

The officers consist of a President, Vice President and Treasurer to be elected annually, and a Secretary to be elected for three years. The President, Secretary and Treasurer constitute the executive committee.

The duties of the officers are such as usually pertain to officers so designated. The duty of the executive committee shall be to prepare, at a reasonable time before each meeting, a program of subjects for special consideration; to solicit papers and reports on practical questions of applied sanitary science; to consider and recommend measures for promoting the objects of the conference and to aid in carrying its plans into operation. The time and place of the meetings may be fixed by the conference when in session, or may on the petition of five members and a vote of two-thirds of the executive committee be called at other times. There is a strong sentiment in favor of having the meetings held at the place where the meetings of the American Public Health Association are held on the Friday and Saturday immediately preceding the annual session of said association. There are many reasons why this should be done, and it is to be hoped that the executive committee, in the absence of any definite action by the conference just closed, relative to the place of the next meeting, will in the interests of efficiency, of economy of time and money and of convenience, call the next meeting in accordance with the above suggestion.

Dr. U. O. B. Wingate, Secretary Wisconsin State Board of Health, read a paper submitting some questions relative to the "Production and Control of Vaccine Virus and Anti-Toxine," and Dr. C. O. Probst, Secretary of the Ohio State Board of Health, presented a brief paper and submitted some questions relative to smallpox and its management.

VACCINATION

The special committee on vaccination reported as follows:

VACCINATION

The special committee on vaccination reported as follows:

1. That vaccination may be defined, as follows: An inoculation by scarification, puncture or injection beneath the epidermis of a vaccine which produces, with some constitutional disturbance, the typical vaccine vesicle, which leaves, after the pock has healed, its characteristic scar.

2. That in order to obtain the most satisfactory results, vaccine must be produced either by federal, state or provincial officials, or by

private producers under the closest supervision of qualified government officials.

3. That for the greatest protection against smallpox, state and provincial laws should provide machinery whereby certified public vaccinators must be appointed for the systematic vaccination, by house to house visitation, of all children born during any year, and at public stations or otherwise of such others as circumstances may make necessary.

4. That the evidence of successful vaccination of all school children, naturally forms a part of any system of public vaccination, and certificates of such should be accepted only when signed by a municipal or local health officer.

5. That in order that the best results may be obtained, it is essential that medical colleges should be urged to provide for thorough instruction in the theory and practice of vaccination, and that all licensed physicians must hold certificates of having had practical instruction in the operation of vaccination in medical colleges, dispensaries, or public vaccine stations.

The report was unanimously adopted.

Prof. C. A. Lindsley, Secretary of the Connecticut State Board of Health, read an interesting paper upon "Summer Resorts."

Two papers on "Yellow Fever and Methods of Prevention" were presented—one by Major W. C. Gorgas, M. D., U. S. A., Havana, Cuba, and the other by Dr. C. T. Finlay, Chief Sanitary Officer of Havana. Both regarded the mosquito as the sole cause of the disease. Dr. Stevens of the Louisiana State Board of Health strongly dissenting from this view—alleging that the disease was spread by fomites as well. The conference pending the results of investigation still in progress did not commit itself by definite expression to any theory.

PRESIDENT'S ADDRESS

The address of the President, Dr. H. M. Bracken, Secretary of the Minnesota State Board of Health, was upon "The State in its Relation to the Tuberculous." He treated it from the following standpoints:

1. The care of the advanced or incurable cases.
2. The care of the incipient cases.
3. The protection of the uninfected.

He strongly advocated the use of properly equipped and judiciously managed sanatoria.

TRANSPORTATION OF THE DEAD

The Maryland State Board of Health, through its Secretary, Dr. J. S. Fulton of Baltimore, submitted a number of amendments to the rules and regulations now in force for the transportation of the dead. It was ordered that a committee be appointed to meet with like committee to be appointed by the National Funeral Directors' Association, the National Association of General Baggage Agents and the American Public Health Association. The committee was not named.

VITAL STATISTICS

Dr. Cressy L. Wilbur, Chief of Division of Vital Statistics, Michigan Department of State, presented two papers: one upon the "Progress of the Movement for Uniform Statistics of Causes of Death," and the other "How Shall Births be Registered?" The conference strongly recommended the adoption of uniform methods for collecting and reporting births, deaths and marriages throughout the territory embraced by the conference and appointed a committee consisting of Drs. Watson, Lindsley and Bryce, with the assistance of Dr. Wilbur to formulate such plans and inaugurate such methods of execution as will most surely and promptly secure the desired object.

TYPHOID FEVER

Dr. H. B. Baker, Secretary of Michigan State Board of Health, read a paper upon typhoid fever with especial reference to its cause.

In addition to the danger of spreading the disease by means of the discharges from the bowels, containing the typhoid bacillus he emphasized the danger from discharges from the bladder and from the mouth showing that these bacilli may often be found in the sputum long after the patient is convalescent. He strongly urged the disinfection of all discharges from typhoid patients.

CALIFORNIA AND BUBONIC PLAGUE

The State Board of Health of Maine presented the following relative to the conduct of the health authorities of California in dealing with the plague question:

WHEREAS, Bubonic plague has been present in California since March, 1900, complete information as to the extent of the disease being withheld by the local authorities, no effective measures of restriction having been put into operation, and the history of the outbreak, so far as we can ascertain from authoritative sources, being as follows; * * * and

WHEREAS, Twenty-five of these cases have occurred in the months of July, August, September and October, 1902, no information as to their origin or exact location having been furnished, no effective steps having been taken to restrict the spread of the disease, the City Board of Health of San Francisco being helpless, and the *mala fides* of the State Board of Health of California having been fully established by the foregoing history supported by documentary evidence in the possession of the conference: therefore

Be it Resolved, That the conference of State and Provincial Boards of Health of North America views with abhorrence the irretrievable disgrace of the present State Board of Health of California, and pronounces the plague situation in California a matter of grave national concern; and

Be it Further Resolved, That the National Conference of State and Provincial Boards of Health of North America does hereby advise the various state boards of health of the United States to consider the pro-

priety of calling upon the surgeon-general of the United States Public Health and Marine Hospital Service to arrange at the earliest possible date a joint conference for the purpose of eradicating plague from the United States."

The resolutions were unanimously adopted.

OFFICERS

The following officers were elected for the ensuing year:

President, Dr. I. A. Watson, New Hampshire.

Vice President, Dr. John Guiteras, Cuba.

Secretary, Dr. G. T. Swartz, Rhode Island.

Treasurer, Dr. J. A. Egan, Illinois.

Conference adjourned *sine die*.

FINANCIAL

The Secretary presented the following report of expenditures for the quarter ending October 31st.

Board meeting, August 7, 1902.

MEMBERS' EXPENSE ACCOUNT

Charles Francis	\$ 27.00
H. Matthey	27.00
P. O. Koto	22.82
J. A. McKlveen	15.80
C. B. Adams	20.96
A. M. Linn	10.00
F. W. Powers	16.70
J. H. Sams	13.85
Total	\$154.13
Paid by State Warrant No. 18531.	

CURRENT EXPENSES FOR AUGUST, 1902

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, stenographer.. . . .	65.00
B. Murphy, printing August <i>Bulletin</i>	69.00
Conference State and Provincial Board of Health, dues....	10.00
Adams Express Company	.35
American Express Company	.45
United States Express Company.. . . .	.80
Western Union Telegraph Company	.29
Total.. . . .	\$245.89
Paid by State Warrant No. 18957.	

CURRENT EXPENSE ACCOUNT, SEPTEMBER, 1902

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
B. Murphy, printing September <i>Bulletin</i>	69.00
Popular Science Monthly	3.00
Western Union Telegraph Company	.91
Adams Express Company	.50
Total	<u>\$238.41</u>

Paid by State Warrant No. 19593.

CURRENT EXPENSES FOR OCTOBER, 1902

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
B. Murphy, printing October <i>Bulletin</i>	69.00
Gertrude Kennedy, services	11.00
J. F. Kennedy, street car, telegraph, etc.	5.25
Geo. A. Miller Printing Co., blank receipts	1.25
Adams Express Company	.30
American Express Company	65
Wells Fargo & Co., express	.30
Total	<u>\$252.75</u>

Paid by State Warrant No. 351.

RECAPITULATION

Board meeting, August	\$154.13
Current expenses for August	245.89
Current expenses for September	238.41
Current expenses for October	252.75
Total	<u>\$891.18</u>

The fiscal year was changed by the legislature from October 1st to begin with July 1st. There were expended for the month of July \$459.40.

Making total expenditure of fiscal year to date, \$1,350.58.

Leaving unexpended of the appropriation, \$3,649.42.

The report was received and referred to the Auditing Committee which reported as follows:

Your Committee to whom was referred the financial report of the Secretary report that we have carefully audited the same and find it correct and that proper vouchers appear for each item of expenditure.

(Signed)

H. MATTHEY, *Chairman.*

The report was adopted and the committee continued:

VACINATION DEFINED

On motion the Board adopted the following definition of vaccination—it being the same as was unanimously adopted by the Conference of State and Provincial Boards of Health of North America, as shown by the foregoing report of the meeting held in New Haven: “An inoculation, by scarification, puncture or injection beneath the epidermis, of a vaccine which produces, with some constitutional disturbance, the typical vaccine vesicle, which leaves, after the pocket is healed, its characteristic scar.”

On motion the Board adjourned *sine die*.

FOURTH QUARTERLY MEETING—FEBRUARY, 1903

The fourth quarterly meeting of the State Board of Health met in the Capitol building, Des Moines, February 18th, and was called to order by President A. M. Linn.

There were present, Linn, McKlveen, Matthey, Francis, Sams, Koto, Adams, Powers and Conniff. The minutes of the November meeting were read and approved.

The report of the Secretary for the quarter ending January 31st was read and considered *seriatim*.

Among the items of interest reported were the following:

INFECTIOUS DISEASES

Outbreaks of the following infectious diseases were reported as having occurred during January at the places respectively designated, the reports of such diseases for November and December having been published in the *Bulletin*:

January:

Diphtheria: Fayette; Silver Creek Twp., Ida county; Milo Twp., Delaware county; Leland; Indianola; Meadow Twp., Clayton county; Westfield Twp., Fayette county; Zearing; Newton Twp., Winnebago county; St Charles Twp., Floyd county.

Measles: Boone; Pleasantville; Exira; Highland Twp., Washington county; Freeman and Lake Twps., Clay county; Des Moines; Wyman.

Scarlet Fever: Colo; Grant Twp., Lyon county; Des Moines; Farmersberg and Garnavillo Twps., Clay county; Rutland; Barclay Twp., Black Hawk county; Washta; Akron; Mason City; Pleasant Valley Twp., Fayette county; Independence; Summit Twp., Adair county; Zearing; Garnavillo; Salem Twp., Henry county; Rockford Twp., Pottawattamie county; Carpenter; Hedrick; Indianola; Gilford Twp., Monroe county; Kellogg; White Oak Twp., Mahaska county; Kirkville; Gilman; Avery.

Smallpox: Stuart; Clinton, 10 cases; Clearfield, 2; Anderson Twp., Mills county, 1; Patterson; Hardin Twp., Johnson county, 2; State Center Twp., Marshall county, 8; Des Moines, 12; Lee Twp., Madison county, 4; Crawford and South Twps., Madison county, 72; Booneville, 1; Walcott, 2; Victor Twp., Cass county, 1; Washta; Logan, 2; Pacific Junction, 1; Iowa City, 15; Tipton, 1; Keokuk, 1; Webb, 4; Jackson Twp., Warren county; Union Twp., Kossuth county, 1; State Center, 7; Cumming; Vincent, 1;

Walnut, 1; North Liberty, 1; Clarion, 2; Millville Twp., Clayton county, 1; Lakeville Twp., Dickinson county, 1; Winterset, 1; Union Twp., Dallas county, 1; Libertyville, 1; Villisca, 1; Wapello, 3; Grove Hill, 3.

Typhoid Fever: Des Moines; Lincoln Twp., Jones county; Gilford Twp., Monroe county.

SPECIAL DISINTERMENTS

The attached applications for special disinterment permits have been filed with the Secretary during the quarter and are respectfully submitted for your consideration:

ALICE LOUISE CLARKE, age 5 years, *smallpox*, 1894; by private conveyance from Tabor cemetery, Rawles Twp., Mills county, to another lot in the same cemetery.

MARGUERITE AGNES DONNELLY, age 26 years, *diphtheria*, 1887; by private conveyance from St. Mary's cemetery, Davenport, to St. Marguerite's cemetery, Davenport Twp., Scott county.

LEMUEL GRANTY DEPUY, age 6 years, *membranous croup*, 1882; by private conveyance from Linwood cemetery, Cedar Rapids, to another lot in the same cemetery.

ARAMINTO FLORENCE FELGER, age 1 year, *membranous croup*, 1883; by private conveyance from Ottawa cemetery, Jackson Twp., Clarke county, to Oak Hill cemetery, Woodburn, Iowa.

CLARA DANT KRUGER, age 3 years, *diphtheria*, 1880; by private conveyance from Cagley cemetery, Bradford Twp., Chickasaw county, to Greenwood cemetery in the same township.

REINHART MANTHEI KRUGER, age 6 years, *diphtheria*, 1880; by private conveyance same as above.

EDWARD WILLIAM MAHER, age 16 years, *diphtheria*, 1890; by private conveyance from Windham cemetery, Hardin Twp., Johnson county to Gosgrove cemetery in the same township.

JOHN JOSEPH MAHER, age 15 years, *diphtheria*, 1890; by private conveyance same as foregoing.

CARL ARTHUR NELSON, age 8 years, *diphtheria*, 1902; by private conveyance from Oakland cemetery, Keokuk, to another lot in the same cemetery.

CLYDE IRWIN NELSON, age 3 years, *diphtheria*, 1902; by private conveyance, same as foregoing.

CORIE ELMA RATHBUN, age 15 years, *diphtheria*, 1877; by private conveyance from Hickory Grove cemetery, Belmond Twp., Wright county, to Upper Grove cemetery, Avery Twp., Hancock county.

HAROLD STONE, age 5 years, *diphtheria*, 1901; by railroad, from Glenwood cemetery, city of Glenwood, to Woodland cemetery, city of Des Moines.

RALPH VAN WORMER, age 6 years, *membranous croup*, 1898; by railroad from Main's cemetery, Reeves Twp., Franklin county, to the town of Clarence.

FRANCIS XAVIER VOEGTLI, age 4 years, *diphtheria*, 1870; by private conveyance from Baden cemetery, Lafayette Twp., Keokuk county, to St. Elizabeth's cemetery in the same township.

DORA VOSS, age 5 years, *diphtheria*, 1890; by private conveyance from Davenport city cemetery to Fairmount cemetery, Rockingham Twp., Scott county.

HUGO WRAAGE, age 10 years, *diphtheria*, 1895; by private conveyance, same as foregoing.

CHICKEN POX

A communication was read from Dr. J. C. Shrader, Iowa City, calling attention to the fact that smallpox was so often called chicken pox that the disease should be quarantined the same as smallpox. The communication was referred to a committee composed of Matthey and Adams. The committee subsequently reported the following, which was adopted:

Your committee having under consideration the communication of Dr. Shrader relative to quarantining chicken pox would respectfully report that in our opinion the people, in view of the fact that this disease *per se* is so harmless, could not be persuaded that such a measure is demanded and that in consequence such a measure would be practically a dead letter. We would recommend that physicians be required to report to the mayor, or township clerk all cases of chicken pox and that the premises where such cases are found shall be *placarded* and the children of the family isolated and be excluded from the schools until recovery has taken place, the premises disinfected and the danger signal removed.

Respectfully,

H. MATTHEY,
C. B. ADAMS.

CIRCULAR NO. 2

The Secretary called attention to the fact that the present edition of Circular No. 2, relating to local boards of health was about exhausted and asked that the same be revised and an edition of 4,000 copies be issued. The matter was referred to the committee on "Publications and Rules," who subsequently reported in favor of revision of a third edition. The report was received and the Secretary was directed to have 4,000 copies of the same printed.

PERSONAL—RESIGNATION

Dr. A. M. Linn, whose term of service ended January 31st, and who under appointment by Governor Cummins, entered upon a second term, tendered the following resignation:

Iowa State Board of Health:

Gentlemen: I am mindful of the generous impulse which prompted your selection of myself as your presiding officer before the expiration of my brief term as a member of this Board. That term was recently extended by reappointment. While entertaining a lively appreciation of the courtesy I am conscious of the fact that a longer retention of this honorable office by me would work to the disadvantage of my colleague, whose term of service expires within a year. I, therefore, tender my resignation as president to take effect immediately and in retiring express my hearty thanks to you my colleagues for the uniform consideration and forbearance shown me during my incumbence of this office.

Very truly,

A. M. LINN.

The resignation was accepted and Dr. Charles Beecher Adams of Sac City was elected in his stead.

AMERICAN PUBLIC HEALTH ASSOCIATION

Dr. McKlveen presented an interesting report, on behalf of himself and Dr. Linn, of the Thirtieth Annual Meeting of the American Public Health Association held at New Orleans, La., December 8-12, 1902.

The report was listened to with interest and ordered placed on file.

PAN-AMERICAN SANITARY CONFERENCE

Dr. F. W. Powers, on behalf of himself and Dr. C. B. Adams, delegates, presented a concise though brief report of the Pan-American Sanitary Conference, which was held at Washington, D. C., December 2-6, 1902, which was received and ordered placed on file.

PLAGUE CONFERENCE

The secretary presented the following report respecting the Plague Conference lately held in Washington, D. C. The report was received and ordered printed in the *Bulletin*.

Gentlemen of the Iowa State Board of Health:

In response to an appointment by your honored president and by His Excellency, Gov. Cummins, your Secretary had the pleasure of at-

tending the Plague Conference, held in Washington City, January 19th, upon a call issued by the Surgeon General of the Public Health and Marine-Hospital Service in accordance with Sec. 7 of an Act of Congress, approved July 1, 1902.

The call was issued by the Surgeon General upon a request signed by five or more state boards of health of which the Iowa Board, through your Secretary, was one.

The conference convened at 10 A. M., in the office of the Surgeon General and was presided over by him. The following states and territories were represented: California, Connecticut, Colorado, Delaware, District of Columbia, Indian Territory, Iowa, Indiana, Louisiana, Maine, Maryland, Minnesota, North Carolina, New Jersey, New York, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont and Virginia—each state being entitled to representation by one delegate.

Dr. G. T. Swartz, Rhode Island, was elected secretary, Surgeon General Wyman delivered a brief address of welcome and made in connection therewith a detailed statement of the plague situation in the United States and Mexico. The latest information received from California was a telegram from Surgeon Glennan, the representative of the Public Health and Marine-Hospital Service for the state of California as well as for the city of San Francisco. The telegram was dated January 17th, two days before the meeting of the conference and was as follows: "San Francisco, Calif., Surgeon General Wyman, Washington, D. C.: Eighty-seven cases have occurred in Chinatown, six sickened in other parts of the city, none proven to have originated in the country. Total, six whites, four Japanese and eighty-three Chinese (Since March, 1900. Last case outside of Chinatown, October 31). As man's personal habits were bad, possibly Chinatown origin, but could not trace connection."

The meeting was a very spirited one indeed. There was not only a strong undercurrent of intense earnestness, but the State Board of Health of California, the late Governor and others who were opposed to the efforts of the city board of health and largely counteracted the measures recommended by the Public Health and Marine-Hospital Service for stamping out the disease were denounced in scathing terms.

A committee was appointed to prepare a formal expression of the sentiment of the conference on this question. The following resolutions were presented by this committee and unanimously adopted by the conference:

I

The presence of plague in California is established beyond debate by—

1. The investigations of Kellogg of the San Francisco Board of Health, Ryfkegal for California State Board of Health and Kinyoun for the United States Marine-Hospital Service.

2. By the later investigations of Pillsbury for the State Board of Health, and by those of J. White, M. White, Flint, Currie, Carmichael, Blue and Glennan for the United States Marine-Hospital Service.

3. By the findings of Flexner, Barker and Novy, composing a special committee acting under federal authority.

4. By the findings of independent and disinterested investigators (supplied with materials from autopsies made at San Francisco, and working in San Francisco, Chicago, Boston, New York, Washington, Baltimore, Philadelphia and Ann Arbor).

5. By the occurrence of a case of human plague in Ann Arbor due to an accident in the manufacture of Haffkine's prophylactic fluid with a culture of plague bacillus obtained in California.

6. By the autopsy records of ninety cases of plague, now in the possession of the United States Marine-Hospital Service and of the San Francisco Board of Health, and published in part in the *Occidental Medical Times* of San Francisco.

II

The presence of plague in any community where proper restrictions are not taken to prevent its spread is an injury to the best interests of that community. Such injury is in any case avoidable by the proper co-operation of all interests involved, commercial, professional and governmental. This conference regards the habitual publication of the actual facts relative in infectious disease and preventive procedures as the surest route to popular confidence, and is one of the means best adapted to minimize the injury liable to result from the presence of such diseases.

III

The present danger to California and the United States lies primarily in the persistence, during nearly three years, of a definite *nidus* of plague infection in that part of San Francisco known as Chinatown; but the gravity of this circumstance is greatly increased by the gross neglect of official duty by the State Board of Health of California, and the obstructive influence of the recent Governor of California, by the failure of the city government of San Francisco to support its city board of health, and by the obstacles opposed to the operations of the United States Public Health Service.

IV

The conference will consider the safety of the country sufficiently assured as soon as satisfied that a competent city board of health of San Francisco, and a competent State Board of Health, in co-operation with the United States Public Health Service, will proceed under definite, harmonious and effective laws and ordinances; that they are provided with ample funds, and that they are jointly and severally in the free exercise of their lawful powers.

V

The conference expresses its conviction that the United States Public Health Service has deserved well of the state of California and of the country, and that it would go far towards the restoration of popular

confidence if the United States Public Health officials were admitted to the same relations with the State Board of Health as have been steadily maintained with the city board of health of San Francisco.

The praise of this conference and the gratitude of the city of San Francisco are due to Drs. John M. Williamson, Vincent P. Buckley, W. B. Lewitt, Rudolph W. Baum, Louis Bazett and Dr. McCarthy of the city board of health of San Francisco, these men possess the unreserved confidence of the executive health officers of the country.

VI

Resolved, That the Surgeon General of the Public Health and Marine-Hospital Service be requested to inform the various state boards of health at least two weeks before the annual meeting of the Public Health and Marine-Hospital Service and the state boards of health to what extent the sanitary recommendations this day made to control and prevent the existence of plague in California have been carried out, to the end that they may be prepared to take further action that may be necessary to accomplish the desired end.

There were some other resolutions presented but as they were regarded as rather extreme they were withdrawn or rather laid over until the annual meeting which will be called for April or May. If it shall then appear that the state and city authorities of San Francisco have not co-operated with the federal authorities and that the conditions are still a menace to the country there will be action taken looking to the petitioning of the Secretary of War to close San Francisco as a transport station for American troops and to inquire as to what extent the plague situation is a menace to the St. Louis Exposition.

Surgeon General Wyman said that under the authority granted by congress he had full authority to take charge of the sanitary interests of that port or any point in the United States where the local authorities were unable or unwilling to cope with a situation that was a menace to the public health, and he assured the conference that he would exercise all the authority placed in his hands if the conditions were such as to warrant it.

The following from the Surgeon General gives the situation since the adjournment of the conference to the time indicated therein:

A great deal of highly interesting telegraphic communication between Surgeon General Wyman and the California health authorities must be omitted owing to the limited space in the *Bulletin*. The following is furnished as an exhibit of the result of the meeting of the conference:

RESOLUTIONS OF MERCANTILE JOINT COMMITTEE

San Francisco, Calif., February 2, 1903.

WHEREAS, The boards of health of other states and territories have become alarmed at the reports of bubonic plague in San Francisco during the past three years; and

WHEREAS, But ninety-three cases have been reported by all health authorities during a period of these thirty-five months and that the last case reported was December 11, 1902; and

WHEREAS, The health authorities of twenty-one states and territories, in a conference called for that purpose at Washington, January 19th, declared that the presence of plague had "been established beyond debate by the investigations of Kellogg of the city board; by Pillsbury and Ryfkogel of the state board; by J. White, M. White, Flint, Currie, Carmichael, Blue and Glennan of the Marine-Hospital Service; by Flexner, Barker and Novy, a special commission acting under federal authority; by independent and disinterested investigators in Chicago, Boston, New York, Washington, Baltimore, Philadelphia and Ann Arbor working from material obtained in San Francisco; by a case of human plague in Ann Arbor due to an accident in the handling of a culture of plague bacillus obtained in California, and said plague conference did attempt to declare a quarantine against California, to cause the transport service to be removed from San Francisco, and to place medical inspectors upon all of the trains going out of the state, and but for the most strenuous efforts of Dr. Gardner, representative of the State Board of Health, could have succeeded in so doing; and

WHEREAS, Said conference did demand that the city and state health authorities act in harmony with the United States Marine-Hospital Service to carry out any sanitary regulations which that service may deem necessary or quarantine would be established against California, at its next meeting to be held in April; and

WHEREAS, The great interests of California and especially those of San Francisco, demand that no neglect of our citizens should hinder the march of progress which has now been so happily begun; it is therefore

Resolved, That this Mercantile Joint Committee, consisting of the officers and other representatives of the State Board of Trade, the San Francisco Board of Trade, the San Francisco Chamber of Commerce, the Merchants' Association of San Francisco, the Merchants' Exchange of San Francisco, the Manufacturers' and Producers' Association of California and the California Promotion Committee, hereby strongly urges the governor of the state and the mayor and supervisors of San Francisco to take such steps at once as shall secure a prompt co-operation of the boards of health of the city and the state, under the supervision of the United States Marine-Hospital Service, to the end that all danger from the bubonic plague may be eradicated, that all fears of infection may be removed, that the confidence of the boards of health of the other states and territories may be restored, and that no injury, however, remote, may result to the foreign and interstate commerce, and to this end we hereby pledge to the officials of the state and city every aid and support of the various commercial bodies which we represent. And we also ask that the governor of the state and the Mayor of the city join in the signing of the following statement:

"WHEREAS, Competent medical authority has declared that bubonic pest has existed to a limited extent in the restricted area known as

Chinatown in San Francisco, the last case having been reported December 11, 1902, and although the health authorities have exercised sanitary supervision over this section in the past,

"NEVERTHELESS, this undersigned joint official statement is promulgated in accordance with the resolutions adopted at the Conference of State Health Officers, held at Washington, D. C., January 19, 1903, as an assurance that there is no present or future danger from that disease, inasmuch as complete and harmonious action by all the health authorities concerned is hereby assured and will be maintained."

GEO. C. PARDEE, Governor.

M. GARDNER, M. D.,

Representative State Board of Health.

E. E. SCHMITZ,

Mayor, San Francisco.

A. P. O'BRIEN, M. D.,

Health Officer, San Francisco.

A. H. GLENNAN,

Surgeon United State Public Health and Marine-Hospital Service.

ARTHUR R. BRIGGS, Vice-President,
California State Board of Trade.

A. A. WATKINS, President,

San Francisco Board of Trade.

GEORGE A. NEWHALL, President,

San Francisco Chamber of Commerce.

FRANK J. SYMMES, President,

Merchants' Association of San Francisco.

GEORGE W. MCNEAR, President,

Merchants' Exchange of San Francisco.

A. SCARBOBO, President,

Manufacturers' and Producers' Association of California.

RUFUS P. JENNINGS,

California Promotion Committee.

(Telegram.)

San Francisco, California, February 9, 1903.

FINANCIAL

The following represents the expenditures of the Board for the quarter ending January 31, 1903:

SPECIAL EXPENSE ACCOUNT

J. F. Kennedy, New Haven meeting	\$ 23.89
Paid by State Warrant No. 390.	
Board Meeting, November 6, 1902.	

MEMBERS' EXPENSE ACCOUNT

C. B. Adams	\$ 24.96
J. A. McKlveen	20.30
H. Matthey	31.00
Chas. Francis	31.00
A. M. Linn	10.00
R. E. Conniff	34.00
P. O. Koto	25.82
F. W. Powers	15.95
J. H. Sams	24.00
Total	\$217.03

Paid by State Warrant No. 454.

CURRENT EXPENSE ACCOUNT FOR NOVEMBER, 1902

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
B. Murphy, November <i>Bulletin</i>	69.00
Lewis Schooler, postage stamps	40.00
Inland Printing Co., blanks	22.50
Gertrude Kennedy, mailing <i>Bulletin</i>	4.00
E. H. Colgrove, books	15.65
Postal Telegraph Co	.59
Western Union Telegraph Co	.25
Total	\$316.99

Paid by State Warrant No. 761.

CURRENT EXPENSE ACCOUNT FOR DECEMBER, 1902

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
C. B. Adams, Washington meeting	113.25
F. W. Powers, Washington meeting	103.25
A. M. Linn, New Orleans meeting	78.65
B. Murphy, December <i>Bulletin</i>	69.00
B. Murphy, Circular No. 3	32.00
L. Schooler, <i>Bulletin</i> postage	30.00
Inland Printing Co., blanks	34.50
F. W. Powers, investigating smallpox, etc	18.05
American Medical Association, fee	5.00
Gertrude Kennedy, mailing <i>Bulletin</i>	4.00
Babyhood Publishing Co., subscription	1.00
Adams Express Co	.95
Wells-Fargo & Co., express	.75
Western Union Telegraph Co	.83
Total	\$656.23

Paid by State Warrant No. 1421.

CURRENT EXPENSE ACCOUNT FOR JANUARY, 1903

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
B. Murphy, January <i>Bulletin</i>	69.00
J. F. Kennedy, Plague Conference, Washington	84.00
Geo. F. Lasher, Postal Guide	2.00
Gertrude Kennedy, mailing <i>Bulletin</i>	4.00
Iowa Litho. Co., letterheads (Powers)	5.00
American Public Health Association	5.00
Geo. A. Miller Printing Co., blanks	6.50

Total	\$240.50
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Paid by State Warrant No. 2535.

RECAPITULATION

Special expense account	\$ 93.89
Members expense account	217.03
Current expense account	316.99
Current expense account, December	656.23
Current expense account, January, 1903	340.00

Total	\$1,624.14
Previously expended	1,350.58

Total expenditure to date	\$2,974.72
Appropriation unexpended	\$2,025.28

The report was received and referred to the Auditing Committee.

REPORT OF AUDITING COMMITTEE

Your Auditing Committee, to whom was referred the financial report of the Secretary for the quarter ending January 31, 1903, beg leave to report that we have carefully audited the same and find it to be correct. We find vouchers on hand covering each item of expenditure.

H. MATTHEY,
Committee.

GASOLINE LAMPS

The following lamps were approved by the Board:

U. S. Street Lighting Co., House System No. 1.

U. S. Street Lighting Co., House System No. 2.

Searchlight 3, 4, 6, 7; 12, 15, 22, 47.

On motion the Board adjourned *sine die*.

ANNUAL MEETING—MAY, 1903

The twenty-third annual meeting of the Iowa State Board of Health convened at the office of the Secretary, Capitol Building, Des Moines, May 20th, and was called to order at 10:30 a. m., by President Dr. C. B. Adams.

There were present Adams, Linn, Koto, Sams, Conniff, Francis, McKlveen, Matthey and Powers.

The minutes of the last meeting were read and approved.

The quarterly report of the Secretary was submitted and considered seriatim.

The Secretary in his report called attention to the reports of outbreaks of infectious diseases throughout the State during the quarter, to disinterment permits issued—special and ordinary, and to application on file for other special permits; to various items of unfinished business; to special communications requiring action by the Board; to the expiration of his Notarial Commission; to the fact that the last edition of Circular No. 7—"Rules and Regulations recommended for adoption by Local Boards"—was exhausted; to the expenditures of the Board during the quarter and for the fiscal year thus far, etc.

The Secretary was directed to renew his Notarial Commission.

GASOLINE LAMPS

The Committee on Gasoline Lamps, Francis and Koto, reported in favor of the approval by the Board of "The Ann Arbor System of Lighting." The report of the committee was adopted.

DISINTERMENT OF DEAD BODIES

Dr. Conniff on behalf of the Committee on Corpses reported in favor of the following applications for special disinterment permits. The re-

port was adopted and the Secretary was ordered to issue the permits accordingly:

HARRY BLOOMER, age 19 years, *diphtheria*, 1903, to be removed from one lot to another in Greenwood cemetery, Muscatine.

AGNES CARVICKEL, 5 years, *diphtheria*, 1864, from Baden cemetery, Lafayette township, Keokuk county, to St. Elizabeth's cemetery in the same township.

CARCILIA CLARKSON, 9 years, *diphtheria*, 1892, same as last named.

ROSA CLARKSON, 15 years, *diphtheria*, 1892, same as last named.

NELLIE GAGE, 5 years, *scarlet fever*, 1899, from Pleasant Hill cemetery, Harrison township, Harrison county, to another lot in the same cemetery.

MATTIE HINERICHSON, 12 years, *diphtheria*, 1892, from Andover cemetery, Elk River township, Clinton county, to Oakland cemetery, Spring Valley township, Clinton county.

THEODORE JOHANN HENRY JASPER, 2 years, *diphtheria*, 1902, from one lot to another in Woodland cemetery, Des Moines.

LAURA MUDGE, 4 years, *diphtheria*, 1882, by U. S. Express from Walnut cemetery, Council Bluffs, to the City cemetery, Ottumwa.

PETER PETERSON, 8 years, *scarlet fever*, 1871, from private cemetery, Lincoln township, Clay county, to Riverside cemetery, Spencer.

ARTHUR PLETZ, 6 years, *scarlet fever*, 1901, from one lot to another in Woodland cemetery, Des Moines.

ELLEN STODDARD, 10 years, *scarlet fever*, 1875, from Red Oak cemetery, Red Oak township, Montgomery county, by railroad to Fremont cemetery, Fremont, Dodge county, Nebraska.

MRS. LORA STOCKER, 19 years, *diphtheria*, 1890,, from Cox cemetery, Union township, Harrison county, to the City cemetery, Logan.

BERTHA TIEDERMANN, 7 years, *diphtheria*, 1885, from one lot to another in Fairmount cemetery, Rockingham township, Scott county.

FRANCIS HEARY TOWERS, 3 years, *diphtheria*, 1873, from a private grave in Highland township, Greene county, to the Churdan (town) cemetery.

DONA E. TURNER, 6 years, *diphtheria*, 1883, from one lot to another in Oakland cemetery, Keokuk.

EDNA WALKER, 4 years, *diphtheria*, 1895, from Shaul cemetery, Ottumwa, to the City cemetery, Ottumwa.

OSCAR WHITE, 21 years, *diphtheria*, 1890, from Cox cemetery, Union township, Harrison county, to the Logan (city) cemetery.

All the foregoing were to be removed by private conveyance except the two as above indicated.

CIRCULAR NO. 7

The Secretary was authorized to have six thousand copies of Circular No. 7, as revised, printed and furnished to township boards as called for.

ELECTION

The following were elected for the ensuing year:

PRESIDENT—J. A. MCKLVEEN, Chariton.

SECRETARY—J. F. KENNEDY, Des Moines.

STENOGRAPHER Mrs. Bessie Omstead, Eagle Grove.

CHEMIST—Prof. C. N. KINNEY, Highland Park College.

BACTERIOLOGIST—Eli Grimes, Des Moines.

Highly complimentary resolutions were adopted, unanimously, commending the efficient and faithful services of Mrs. Margaret S. Schoonover, who after five years' of service, declined a re-election as stenographer.

FINANCIAL

The following financial exhibit for the quarter ending April 30, 1903, was presented by the Secretary:

The following represents the expenditures of the Board for the quarter ending April 30, 1903:

Board Meeting, February 19, 1903.

The following financial exhibit for the quarter ending April 30, 1903, was presented by the Secretary:

The following represents the expenditures of the Board for the quarter ending April 30, 1903:

Board Meeting, February 19, 1903.

MEMBERS' EXPENSE ACCOUNT

J. H. Sams	\$ 26.20
C. B. Adams	24.96
H. Matthey	30.50
J. A. McKlveen	19.80
A. M. Linn	10.00
R. E. Conniff	28.00
Chas. Francis	32.00
F. W. Powers	25.70
P. O. Koto	27.32
Total	<u>\$224.48</u>

Paid by State Warrant No. 2895.

CURRENT EXPENSE ACCOUNT, FEBRUARY, 1903

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
B. Murphy, <i>Bulletin</i>	69.00
J. A. McKlveen, New Orleans meeting	102.96
The Sanitarian, subscription	4.00
Mutual Telephone Co	9.00
Postage stamps	50.00
Chauncy Wing, sharpening knives	.35
Total	<u>\$400.31</u>

Paid by State Warrant No. 2943.

CURRENT EXPENSE ACCOUNT, MARCH, 1903

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
B. Murphy, <i>Bulletin</i>	69.00
B. Murphy, printing Circular No. 2, etc	36.85
J. H. Welch, binding 36 <i>Bulletins</i>	18.00
Langan Bros., clasp envelopes	13.88
Gertrude Kennedy, mailing <i>Bulletin</i>	8.00
American Veterinary Review, subscription	3.00
Langan Bros., crushed envelopes	2.99
Franklin Printing Co., printing portfolios	2.00
Iowa Telephone Co	.35
American Express Co	.30
Western Union Telegraph Co	.25
Total	\$319.62
Paid by State Warrant No. 3806.	

CURRENT EXPENSE ACCOUNT, APRIL, 1903

J. F. Kennedy, Secretary	\$100.00
Margaret S. Schoonover, Stenographer	65.00
B. Murphy, printing <i>Bulletin</i>	69.00
Iowa Litho. Co., letterheads	5.00
Mutual Telephone Co	3.00
American Medical Association, journal	5.00
Franklin Printing Co., circulars	1.50
Wells-Fargo & Co., express	.75
Adams Express Co	1.04
American Express Co	.25
Total	\$250.54
Paid by State Warrant No. 4548.	

The fiscal year ends with June 30th. The expenditures for the year thus far have been as follows:

July, 1902	\$ 459.40
Quarter ending October 31st	891.18
Quarter ending January 31, 1903	1,624.64
Quarter ending April 30th	1,194.95
Total	\$4,170.17
Leaving unexpended for the months of May and June.	\$829.83

The report was received and referred to the Auditing Committee.

On motion the Board adjourned to meet on Wednesday, August 5th, *proximo*.

II

RAILROAD ACCIDENTS

From the reports of the Railroad Commissioners for 1901 and 1902 the following interesting data respecting deaths and injuries from railroad accidents occurring in the State of Iowa are presented:

ACCIDENTS TO PERSONS IN IOWA

Year	Killed			Injured		
	Passengers.	Employees.	Others.	Passengers.	Employees.	Others.
1878.....	20	29	81	51	187	85
1879.....	2	42	40	12	108	39
1880.....	5	87	88	9	140	84
1881.....	7	67	84	17	146	81
1882.....	7	89	69	60	502	72
1883.....	4	83	65	25	255	50
1884.....	6	73	51	47	848	59
1885.....	9	72	75	89	720	66
1886.....	8	61	62	35	886	74
1887.....	8	59	65	26	854	58
1888.....	10	101	69	77	564	86
1889.....	4	85	88	25	442	46
1890.....	9	78	69	67	579	101
1891.....	5	82	61	80	601	68
1892.....	23	80	76	68	258	77
1893.....	17	81	79	78	682	64
1894.....	7	48	90	62	867	62
1895.....	4	47	82	89	880	74
1896.....	6	36	96	62	411	84
1897.....	27	40	90	81	291	86
1898.....	5	44	114	80	801	70
1899.....	14	62	96	101	848	128
1900.....	9	70	148	82	449	186
1901.....	7	65	151	104	686	142
1902.....	9	64	120	104	858	129

The foregoing table gives the comparative record of "killed" and "injured" for each year from 1898 to 1902, both inclusive. Comparing the record of 1898 with that of 1902 it would seem as if the automatic couplers and airbrakes in use today had not been productive of the saving of life and limb that could reasonably have been expected. In 1878, 29 employees were killed and

137 injured. In 1902, 64 employees were killed and 853 injured. It would be interesting to know to what extent the increase in railway mileage and in the increased number of employees is responsible for the great increase in "killed" and "injured." The total number of passengers, employees and others killed in 1878 was 80, and of injured 223. The total number of passengers, employees and others killed in 1902 was 195 and injured 1,095. Total casualties for 1878, killed and injured were 303; for 1902, 1,290. The employees killed in 1878 numbered 29; the employees injured 137. Total employees killed and injured in 1878, 266. Employees killed in 1902, 64; employees injured, 853. Total number of employees killed and injured in 1902, 917.

The number of miles operated in 1878 were 14,157.14; in 1902, 41,396.44. The number of employees in 1878 in Iowa were 13,518, and in 1902, 40,613.

The following tables from the reports of Railroad Commissioners furnish interesting data for each year since, and including 1878, relative to railroad casualties and the beneficial results of modern methods of coupling and braking on the trains so far as railway employees are concerned:

AUTOMATIC COUPLERS AND TRAIN BRAKES

Number of cars equipped and number of employees and accidents to employees from coupling cars and falling from trains

Year	Number of all cars.	Equipped with automatic couplers.	Equipped with power or train brake.	Number of employees.	Number killed coupling cars.	Number injured coupling cars.	Number killed falling from trains.	Number injured falling from trains.
1878	29,057			13,518				
1879	81,584			15,341				
1880	54,451			18,985				
1881	67,510			21,074				
1882	85,206		1,581	17,273	16	182	31	57
1883	96,106		1,814	27,112	16	96	88	42
1884	103,337		1,917	26,781	8	109	10	57
1885	102,835		2,200	25,666	13	174	16	84
1886	106,178		2,164	25,761	10	126	25	88
1887	91,097		2,545	29,688	9	184	28	39
1888	113,975		1,864	30,794	19	240	32	52
1889	120,757	4,210	3,686	24,642	8	149	5	44
1890	127,464	9,194	10,422	24,351	14	205	17	53
1891	130,103	18,178	14,395	27,589	13	242	23	82
1892	149,781	34,815	29,047	30,192	14	196	28	68
1893	142,730	49,871	39,296	31,127	10	196	22	68
1894	127,171	46,558	37,784	29,608	7	91	17	32
1895	158,721	58,832	53,078	24,107	5	80	20	87
1896	182,529	70,718	87,050	28,165	6	97	19	85
1897	171,909	101,851	90,648	28,690	7	80	14	65
1898	176,085	142,638	105,528	30,009	4	75	18	50
1899	190,780	180,505	127,907	32,385	12	73	12	64
1900	200,814	188,656	134,691	37,696	8	59	20	59
1901	211,883	210,464	158,712	37,336	6	52	21	100
1902	237,289	236,276	188,712	40,636	4	49	6	98

There is much food for thought in the foregoing figures from a social and humanitarian as well as economic standpoint. It is pertinent to inquire as to what extent these accidents could have been avoided by proper care. All great corporations are responsible for the lives and health of their employes and patrons; and where it can be shown that death and injury come to employe, passenger or others through neglect or through the employment of persons incapacitated mentally, physically or through intoxication the courts as well as the people should place the blame where it belongs and prevent further loss of life and limb. It would seem that the competitive ambition to greater speed should only follow double or quadrupled tracks and the use of the latest and best methods of protection against accidents.

III

INFECTIOUS DISEASES REPORTED

The Secretary sent for 1901 and 1902, respectively, the following circular to every local board of health in the State:

REPORT OF INFECTIOUS DISEASES

To the Iowa State Board of Health:

In accordance with Section 2571, the Code, I report herewith the number of cases of infectious diseases reported as occurring within limits of the(city, town or township) of County of, State of Iowa, for the year ending December 31, 190..

	Asiatic Cholera.	Diphtheria or Membranous Group.	Leprosy.	Measles.	Puerperal Fever.	Scarlet Fever.	Small Pox.	Typhoid Fever.	Whooping Co. gh.	Total No.	Remarks
No. cases											
No. of deaths											

Signed Clerk.

Important Notice. Section 2571, the Code, defining the duties of local boards of health, says: "And through their physician or clerk shall make *general report* to the State Board of Health at least once a year, and *special reports* when it may demand them, of its proceedings and

such other facts as may be required, on blanks furnished by them and in accordance with instructions from it."

As the "health officer" or physician of the local board does not have the data upon which to make such a report, the State Board requires it to be made by the Clerk. The Clerk of each local board of health, whether city, town or township, must keep a complete record of all the cases of the above named diseases, reported by physicians or others, as a basis upon which to make this report. If no such diseases have been reported, return this blank reporting that fact.

These reports should be sent to the Secretary of the State Board of Health on or before January 31st in each year.

In addition to the above report, the Clerk of each local board of health, whether city, town or township, must report to the Secretary of the State Board of Health, at once, as reported to him, outbreaks of any of the above named diseases, the source of the infection, and the measures adopted to prevent its spread. No special form for this report is required.

Every such Clerk must also report to the Secretary of the State Board of Health, as soon as determined, the name and postoffice address of the health officer elected as required by Section 2568, the Code.

Send all reports and communications to

J. F. KENNEDY, Secretary,
Des Moines.

These circulars were sent in 1901 to 725 incorporated cities and towns and to 1,612 townships. Total circulars sent 2,337. Reports were received from 320 cities and towns and 934 from townships. Total, 1,254. There were 405 cities and towns and 678 townships not reported. Total, 1,083.

In 1902 circulars were sent to 781 incorporated towns and cities and to 1,611 townships. Total circulars sent 2,398. Reports were received 347 cities and towns and 823 from townships. Total 1,170. There were from 434 cities and towns and 794 townships that did not make any report. Total not reporting 1,228.

The reports as received showed the following:

Diseases.	1901		1902	
	Cases	Deaths.	Cases	Deaths
Asiatic cholera			2	
Diphtheria	1,277	150	841	116
Leprosy			1	
Measles	2,070	10	3,044	29
Puerperal fever	46	9	23	13
Scarlet fever	2,480	75	2,548	69
Smallpox	4,496	19	6,724	15
Typhoid fever	612	73	549	101
Whooping cough	1,356	17	3,196	33

For the biennial period the cases and deaths were as follows:

Diseases	Cases	Deaths
Asiatic cholera	2	
Diphtheria	2,118	266
*Leprosy	1	
Measles	5,114	39
Puerperal fever	69	22
Scarlet fever	5,028	144
Smallpox	11,220	34
Typhoid fever	1,161	174
Whooping cough	4,552	50

*Humboldt county.

It will be seen from the above that the most fatal disease was diphtheria, and following that was typhoid fever and scarlet fever. Smallpox was the most serious disease from an economic standpoint. A low estimate would place the cost to the State of each case at \$20, which would make the aggregate cost \$224,400. There was also a loss of thirty-four lives. In the above footings it must be borne in mind that 1,082 local boards out of a total of 2,333 in the State, made no report. Could there be a stronger argument for prompt and efficient preventive measures?

IV

REGISTRATION OF VITAL STATISTICS *

Vital statistics are valuable from a genealogical, historical, sociological and scientific standpoint. The data embraced in such statistics differ in various states and countries. When the Iowa State Board of Health was created by the legislature in 1880, among other duties specified under the statute, it was required to supervise a registration of marriages, births and deaths occurring within the state. In some other states such statistics also embrace divorces.

Upon the organization of the State Board of Health, in accordance with the above requirement blanks were adopted requiring the following data:

MARRIAGES

Number of license; date of license; by whom affidavit was made; by whom consent to marriage was given; full name of groom; place of residence; occupation; age; place of birth; father's name; mother's maiden name; color; race and number of marriage; full name of bride; maiden name—if a widow; place of residence; age; place of birth; father's full name; mother's full maiden name; color; race and number of marriage; where and when married; by whom married—name and official position; witnesses; date of return of marriage and when registered.

The clerk of every county in the state has a copy of this blank form and is expected to enter therein the data called for, and the law requires him on or before the first day of June of each year to furnish a copy thereof to the secretary of the State

* By J. F. Kennedy, M. D., secretary State Board of Health. From the January number of the *Annals of Iowa*,

Board of Health, who as they are received, arranges them by counties alphabetically and has them substantially bound.

A moment's reflection will show the great value and importance of such a record from a domestic, social and legal, as well as historical standpoint, especially when it is considered that the original records have been destroyed in some of the counties from which they were sent to the office of the State Board of Health. It ought also to emphasize the importance of care and fidelity on the part of the respective county clerks in requiring all the data indicated to be furnished them and in making full and complete returns to the State Board of Health as the law directs. The fact is, however, that many of these items have been omitted from our reports by the county clerks and to that extent they are imperfect. The probability, however, is that the reports of marriages so far as number and names are concerned are approximately, if not absolutely, correct.

BIRTHS

From 1880 until 1896 the physicians and midwives of the state were obliged, under a penalty of ten dollars for each neglect, to report within thirty days after their occurrence, to the clerk of the county in which they occurred, all births and deaths coming under their professional observation.

This requirement, though it may be somewhat humiliating to admit, was never very cordially approved by the medical profession, from the fact that it entailed a duty and a labor in its performance, without any compensation. Because of this, some, and because of indifference, others, refused or neglected to comply with the law. The supreme court, however, in a case to test the constitutionality of the requirement, declared the law a reasonable and constitutional one that the physicians as members of a noble profession should cheerfully comply with.

The data required to be furnished by physicians and midwives in the case of births, embraced the following items:—Full name of child; sex; number of child by this mother; color; time of birth; place of birth; born in wedlock? yes or no; father's full name; age; occupation; and place of birth; mother's place of birth; age; maiden name and residence; name and address of medical or other attendant; returned by; date of return. As in the case of marriages and deaths, the county clerks are obliged to furnish the Secretary of the State

Board of Health, on or before the first day of June a report of all births occurring within their respective counties for the year ending with the thirty-first day of December immediately preceding.

Notwithstanding, however, the decision of the supreme court above referred to, and the professional obligations resting upon the physicians of the state to make these reports to the county clerks, from which only his returns could be copied, there were many who still neglected or refused to do so; and hence their patrons do not have the pleasure and benefits, and the state and science lose the benefits to be derived from such records when faithfully reported, compiled and deposited in the archives of the respective counties and State. This neglect however, does not lessen the value of those that are reported and are thus incorporated into the history of the State.

Because of the failure on the part of the physicians of the state to faithfully report births and deaths, the legislature of 1894 relieved the physicians and midwives of this obligation, and so changed the law as to have these casualties collected by the assessors appointed by the county auditors, upon blanks furnished by the State Board of Health.

In order to render this task as easy as possible for the assessor the State Board of Health only required information as to the name of the child; sex; date of birth; place of birth; mother's full maiden name; and father's full name. It is to be regretted that the change in the method of collecting these statistics was not an improvement upon the former one. The assessors, though, furnished with proper blanks, by the county auditors and paid and sworn to do their duty, neglected to do so in so many cases that the county clerks, in a State Convention held in the City of Des Moines in the fall of 1901, unanimously declared the present law ineffective and recommended a return to the former one. The former law with a reasonable compensation for each complete return of a birth or death, and a sufficient penalty including the right and duty of the State Board of Medical Examiners to revoke the certificates of physicians convicted of neglecting or refusing to comply with the law, would secure, as they have in most of the eastern states, vital statistics so complete and reliable as to be valuable for historical, legal and sanitary purposes.

DEATHS

The law relating to the reporting of deaths, both prior and subsequent to 1894 was the same as in case of births. The data sought to be obtained were as follows:—Name of deceased; nationality; sex; color; age; occupation; date, cause and place of death; social condition—single, married, widow or widower; place and date of burial and name of physician making report.

After the law was changed so as to place the collection of these data in the hands of the assessors as above stated in the case of births, the data required were as follows:—Full name, sex, age, occupation, place and date of birth and death; social condition; cause of death and place of burial. The same incompleteness obtained in regard to these, yet with all these defects, not in the facts reported, but because of the data not reported, the vital statistics thus collected, arranged and conveniently and substantially bound are invaluable to the State as exploiting important events in the personal history of persons who were born, married or who died in Iowa.

Births, marriages and deaths are important, if not the most important epochs in the life of any individual. There is a natural and commendable pride in the place of one's birth and surely to be born in Iowa is to be born well.

Reliable vital statistics, furnishing the data above suggested are of great value as a basis for sanitary operations. Such returns would not only show the relative proportion of deaths to births and of births to marriages and the ratio of increase of population by births and by immigration, respectively, but by giving the causes of death in different localities would enable the State and local board of health, where there is an apparent or real excess of deaths from any disease to ascertain the cause and to more intelligently adapt and apply remedies for its removal.

Every state should have a reliable bureau of information, especially relating to the personnel of its citizens and the vital statistics above detailed is the nearest and only approach to it in Iowa. Some interesting incidents might be given illustrating the advantages of such records. A gentleman came to this state from England some years ago, leaving his wife and family behind him. His wife heard from him for two or three years and then there came a lapse in the correspondence. The

wife sought to get information in various ways and finally wrote to the Secretary of the State Board of Health. She gave the name of the county from which he had last written. An examination of the records in the office of the State Board of Health showed that in the county named a person corresponding to the name given had died, that he was a native of England, married, etc.; the date and cause of death; place of burial; and name of the attending physician. The facts were reported to the wife and a letter received from her later expressed her gratitude and appreciation at the information furnished, sad as it was.

There have been innumerable instances where parents have sought information respecting the birth or death of their children and where parents have looked for a record of their marriage. In counties where the original records have been destroyed by fires or otherwise, the copies of these records deposited safely with the State are of inestimable advantage.

The foregoing is suggestive of what the State has aimed to do in the way of collecting vital statistics; what it has done; what it has failed to do and the cause of such failure as well as some of the benefits of such statistics. It also suggests the duty of the legislature to so amend our present law as to cure its defects and assure such a registration in the future as will reflect the intelligence of our people, and place our State alongside of the most progressive states in the union.

VITAL STATISTICS—PART 1

The returns of marriages, births and deaths for the years ending December 31, 1901 and 1902, respectively, are shown herewith. As a means of comparison the same data for 1899 and 1900 are reproduced:

Counties	1899			1900		
	Marriages.	Births.	Deaths.	Marriages.	Births.	Deaths.
Adair	117	297	77	141	302	86
Adams	116	229	108	125	261	89
Allamakee	180	810	124	180	362	164
Appanoose	271	517	198	265	485	138
Audubon	66	266	77	73	263	71
Benton	200	401	123	222	473	128
Black Hawk	263	394	173	329	386	121
Boone	259	540	149	293	639	138
Bremer	144	308	114	106	221	105
Buchanan	163	268	131	176	353	152
Buena Vista	119	275	57	126	179	90
Butler	149	423	134	114	430	123
Calhoun	127	324	70	149	400	108
Carroll	182	440	108	132	473	106
Cass	207	353	115	136	329	107
Cedar	113	337	123	156	350	131
Cerro Gordo	193	390	68	193	354	107
Cherokee	149	323	57	103	347	56
Chickasaw	191	297	73	123	254	73
Clarke	124	272	104	136	253	107
Clay	164	252	44	114	236	71
Clayton	201	536	193	233	542	139
Clinton	366	679	240	373	644	250
Crawford	183	469	146	155	503	133
Dallas	201	412	123	223	453	123
Davis	142	290	107	157	292	93
Decatur	166	361	113	137	363	103
Delaware	156	333	126	131	436	167
Des Moines	324	541	431	413	537	363
Dickinson	70	163	25	59	164	50
Dubuque	401	740	433	491	677	233
Emmet	75	173	21	83	203	39
Fayette	245	493	139	214	443	144
Floyd	160	279	113	175	274	74
Franklin	130	307	92	129	231	64
Fremont	135	320	103	134	307	123
Greene	131	239	73	173	233	90
Grundy	135	233	59	117	322	139
Guthrie	175	302	103	171	364	70
Hamilton	199	373	93	135	336	121
Hancock	105	250	55	107	230	67
Hardin	207	336	121	204	397	123
Harrison	221	439	134	206	433	172
Henry	174	343	273	200	324	237
Howard	115	311	93	112	255	55
Humboldt	93	193	53	91	235	70
Ia	63	233	55	83	259	63
Iowa	163	413	143	174	427	133
Jackson	197	403	142	133	394	130
Jasper	223	433	151	272	439	143
Jefferson	175	359	157	163	304	122
Johnson	213	443	271	133	434	277
Jones	173	234	120	163	333	131
Koosauk	221	431	153	235	433	147
Kossuth	159	443	87	213	334	117
Lee	374	417	233	399	430	233
Linn	493	733	274	539	633	234

VITAL STATISTICS—PART 1—CONTINUED

Counties	1899			1900		
	Marriages.	Births.	Deaths.	Marriages.	Births.	Deaths.
Louis.....	106	286	187	95	262	107
Lucas.....	106	224	64	171	249	58
Lyon.....	71	315	62	93	319	54
Madison.....	160	342	144	155	309	95
Maheba.....	388	509	199	374	590	173
Marion.....	217	415	210	280	496	202
Marshall.....	266	522	217	341	557	183
Mills.....	184	294	166	147	297	131
Mitchell.....	123	238	94	99	231	117
Monona.....	140	391	96	103	431	96
Monroe.....	173	273	134	153	390	94
Montgomery.....	166	239	81	136	237	109
Muscatine.....	232	261	134	273	404	139
O'Brien.....	86	374	72	111	379	95
Oscola.....	77	234	59	96	224	43
Pago.....	103	394	192	240	415	169
Palo Alto.....	127	271	52	115	229	59
Plymouth.....	143	474	43	162	503	113
Pocahontas.....	115	336	64	141	344	79
Polk.....	486	1,132	384	1,017	741	195
Postawattanawic.....	98	309	77	103	231	91
Poweshiek.....	133	346	154	156	303	142
Ringgold.....	130	343	89	125	230	73
Sac.....	141	333	73	149	236	92
Scott.....	525	332	623	597	332	607
Shelby.....	145	413	89	131	400	106
Stout.....	130	344	131	134	324	140
Story.....	133	373	149	217	335	139
Tama.....	134	356	71	205	343	83
Taylor.....	154	230	103	133	307	83
Union.....	177	236	85	133	233	63
Van Puren.....	149	323	149	140	304	142
Wapello.....	353	503	133	337	542	240
Warren.....	152	330	109	133	236	107
Washington.....	173	329	130	133	332	133
Wayne.....	174	247	95	173	339	125
Webster.....	213	336	133	223	333	133
Winnebago.....	95	237	89	93	232	74
Winnebago.....	136	432	212	173	304	214
Woodbury.....	533	333	217	533	1,007	244
Worth.....	70	230	67	100	234	74
Wright.....	153	332	59	217	337	60
Total.....	14,224	39,397	13,337	19,175	43,465	12,390

VITAL STATISTICS—PART II

Counties	1901			1902		
	Mar. riages.	Births.	Deaths.	Mar. riages.	Births.	Deaths.
Adair.....	189	235	97	120	888	86
Adams.....	182	281	57	118	292	82
Allamakee.....	238	396	176	159	960	142
Appanoose.....	120	530	156	206	812	84
Audubon.....	77	269	79	156	822	71
Benton.....	229	401	108	232	437	112
Black Hawk.....	386	576	155	361	438	157
Boone.....	249	618	208	296	554	212
Bremer.....	167	296	107	168	381	141
Buchanan.....	166	309	173	168	806	818
Buena Vista.....	138	268	91	184	321	82
Butler.....	122	376	134	131	374	113
Calhoun.....	147	258	78	127	846	95
Carroll.....	171	374	92	195	372	78
Cass.....	218	265	73	204	342	99
Cedar.....	153	359	143	126	298	128
Cerro Gordo.....	240	219	112	282	372	83
Cherokee.....	157	301	68	109	384	86
Chickasaw.....	145	234	112	128	306	91
Clarke.....	111	214	73	115	241	87
Clay.....	107	185	53	101	200	45
Clayton.....	222	589	171	217	477	137
Clinton.....	348	602	239	371	616	245
Crawford.....	188	429	180	200	484	131
Dallas.....	196	398	118	182	485	123
Davis.....	156	282	104	180	253	90
Decatur.....	178	306	130	157	309	108
Delaware.....	165	396	167	175	361	130
Des Moines.....	394	527	329	383	379	436
Dickinson.....	54	169	35	88	137	81
Dubuque.....	508	1,089	668	478	1,025	648
Emmet.....	107	206	62	78	208	67
Fayette.....	215	326	198	257	536	177
Floyd.....	189	280	101	147	248	138
Franklin.....	186	251	68	122	298	72
Fremont.....	120	261	89	109	325	76
Greene.....	127	396	74	153	306	76
Grundy.....	135	293	85	123	184	172
Guthrie.....	168	305	93	183	300	62
Hamilton.....	250	422	95	161	361	91
Hancock.....	109	314	71	110	223	63
Hardin.....	198	374	128	208	341	124
Harrison.....	250	464	180	221	421	134
Henry.....	166	295	86	175	269	143
Howard.....	120	295	72	121	174	91
Humboldt.....	112	208	75	92	216	80
Ida.....	86	253	29	179	308	3
Iowa.....	168	298	110	149	396	137
Jackson.....	199	295	128	174	432	206
Jasper.....	245	436	154	242	497	145
Jefferson.....	152	320	154	142	251	95
Johnson.....	204	454	185	205	461	208
Jones.....	168	343	151	189	341	145
Keokuk.....	204	500	160	221	438	177
Kossuth.....	182	493	122	190	598	124
Lee.....	372	374	330	390	445	245
Linn.....	564	774	337	599	780	244
Louis.....	108	245	90	104	174	89
Lucas.....	198	214	74	142	156	61
Lyon.....	91	238	71	91	341	65
Madison.....	155	299	128	189	361	111
Mahaaska.....	325	500	156	345	595	187
Marion.....	338	458	167	294	422	168
Marshall.....	332	553	244	326	504	164
Mills.....	145	296	110	137	295	108
Mitchell.....	110	234	100	127	210	53
Monona.....	161	397	100	158	330	94
Monroe.....	192	398	119	201	440	114

VITAL STATISTICS—PART II—CONTINUED.

Counties	1901			1902		
	Mar- riages.	Births.	Deaths.	Mar- riages.	Births.	Deaths.
Montgomery.....	180	307	76	195	240	75
Muscatine.....	298	219	105	297	308	119
O'Brien.....	104	360	105	.....	.....	.....
Osceola.....	79	222	55	77	245	41
Page.....	276	359	185	217	426	190
Palo Alto.....	80	325	55	94	291	41
Plymouth.....	144	448	110	168	447	67
Pocahontas.....	116	347	88	98	410	66
Polk.....	1,006	1,295	440	1,079	1,238	253
Pottawattamie.....	698	897	375	749	848	386
Poweshiek.....	150	330	98	164	295	121
Ringgold.....	156	357	65	146	261	81
Sac.....	42	299	87	181	281	66
Scott.....	574	801	375	564	310	648
Shelby.....	129	361	100	153	441	87
Stowax.....	188	546	180	200	587	120
Story.....	184	452	108	228	482	166
Tama.....	213	388	100	210	399	119
Taylor.....	154	278	96	158	312	96
Union.....	218	238	88	197	189	79
Van Buren.....	159	264	141	114	313	150
Wapello.....	381	601	261	394	462	186
Warren.....	164	359	88	166	308	110
Washington.....	191	373	169	198	335	146
Wayne.....	226	364	105	123	380	108
Webster.....	272	407	184	246	586	210
Winnebago.....	114	282	97	96	269	62
Winneshiek.....	173	483	213	179	486	209
Woodbury.....	521	1,020	375	577	864	311
Worth.....	85	265	77	92	230	66
Wright.....	141	691	79	156	253	76
Total.....	20,227	56,847	14,008	20,508	48,759	12,497
Total for biennial period.....	40,780	108,106	28,500	.....	.....	.....

DEATHS OCCURRING IN STATE INSTITUTIONS UNDER THE BOARD OF CONTROL FOR THE BIENNIAL PERIOD ENDING JUNE 30, 1908

Institutions	Male.	Female	Total.
Soldiers' Home, Marshalltown.....	96	6	102
Soldiers' Orphans' Home, Davenport.....		1	1
College for Blind, Vinton.....			
School for Deaf, Council Bluffs.....			
Institution for Feeble-Minded, Glenwood.....	41	34	75
Industrial School for Boys, Eldora.....	2		2
Industrial School for Girls, Mitchellville.....		8	8
State Hospital (Insane), Mt. Pleasant.....	100	57	157
State Hospital (Insane), Independence.....	119	54	173
State Hospital (Insane), Clarinda.....	108	57	165
State Hospital (Insane), Cherokee.....	28	21	49
Hospital for Inebriates, Mt. Pleasant.....	5		5
Hospital for Inebriates, Independence.....	1		1
Hospital for Inebriates, Clarinda.....	1		1
Hospital for Inebriates, Cherokee.....	8		8
Penitentiary, Ft. Madison.....	6	2	8
Penitentiary, Anamosa.....			
Total for all institutions.....	508	285	793

*Does not include deaths outside of institution—of those absent on parole.

The returns of marriages, births and deaths show the following for the State:

	Marriages	Births	Deaths
1901	20,227	56,347	14,003
1902	20,503	46,759	12,497
	Marriages	Births	Deaths
Total for biennial period ending December			
31, 1902	40,730	103,106	26,500

V

DUTIES AND RESPONSIBILITIES OF LOCAL BOARDS OF HEALTH

BY J. F. KENNEDY, M. D., DES MOINES, SECRETARY STATE BOARD OF HEALTH

Local boards of health, whether in cities, town or townships, like the State Board of Medical Examiners, are a kind of wheel within a wheel. The latter consists of the physicians of the State Board of Health and yet finds its duties defined by a different statute entirely from that providing for and regulating the State Board of Health.

So, too, boards of health are also councilmen with duties assigned under different statutes.

In looking this matter up I was surprised to find that I was so long ignorant of the fact that the board of health of a city or town does not comprise all the members of the city or town council. I have been in the habit of stating to those making the inquiry, and our literature teaches, that the local board of health is composed of the entire council with the mayor. The statute relating to local boards of health, however, does not so read. The organization of local boards of health and a declaration of their duties is set forth in title 5, chapter 14, of the Code, beginning with section 1024 and ending with section 1046.

Respecting the organization of the board in cities and towns section 1025 says:

"There shall be appointed in every such city a local board of health consisting of five members, a majority of whom, including the mayor, shall be members of the city council. The mayor of the city shall be *ex officio* one of said members and the chairman thereof. The manner of appointment and duration of office of said board shall be determined by ordinance of said city.

I was surprised in reading that section to find that however large the council might be, the board of health was limited to only five members and the mayor, and that two of the members need not be members of the council.

Another surprise I found in section 1026, which declares that this board and not the council as such shall appoint the physician to the board. The city clerk need not necessarily be the clerk of the board of

health. "The board of health with the consent of the council shall appoint all officers and agents necessary to execute their rules and orders and fix the compensation of these appointees, subject to approval by the council. The majority of the members of the board shall constitute a quorum for the transaction of all business and the exercise of powers conferred upon the board."

It will be noticed that this direction as to the organization of boards of health in cities differs from section 2568 of the statute relating to the State Board of Health wherein it states that "the mayor and council of each town or city shall constitute a local board of health." I do not know and would be pleased to learn under which section of the Code local boards of cities are really organized.

The duties and responsibilities as defined by the Code are as defined by the sections above referred to:

To report to the State Board of Health at least once a year, the proceedings of the board and such other facts as there may be, and also to make special reports when required to do so by the State Board; make rules, regulations and orders respecting the connection of buildings with sewers; the approval of plans for plumbing; the inspection of all plumbing; the inspection of milk, provisions and all food products sold within the city and their condemnation and destruction when impure or diseased; the collection and disposal of garbage; the condemnation of impure wells and cisterns; the prompt report to the mayor and Secretary of the State Board of Health of infectious diseases; to investigate and remove all nuisances, sources of filth and causes of sickness within their jurisdiction, on all boats in its ports or harbors, or on railroad cars passing through such city; to make such rules, regulations and orders for the prevention of nuisances and the preservation of the public health as said board may judge necessary for the public health and safety, and shall from time to time report to the city council, for adoption, ordinances for carrying such rules, regulations and orders into effect, and for the appointment of the proper inspectors and officers necessary to enforce the same.

Section 1029 empowers the local board to provide ordinances for the punishment by fine and imprisonment of any one who knowingly violates or fails to comply with any of the above-named rules, regulations or orders.

Sections 1031, 1032, 1033 and 1034 give specific details as to "Sewer connections; plumbing and nuisances," as well as to the abatement and enjoining of the same.

It would be well for every city official to carefully and prayerfully study these sections and to resolve that their responsibilities under the law relating to the public health shall be fully met.

Section 1035 declares that rules and regulations for the public health when passed and duly signed and attested, shall be published twice in the official newspaper of the city. This is an important provision. The courts in several instances have dismissed cases against violators of such rules and regulations because it could not be shown that they had, after being adopted, been properly published.

Section 1036 declares that any notice relative to quarantine, nuisances, etc., may be served by any one designated by the local board. All such notices must be in writing, a copy of which should be left with the party, and acknowledged by him, and a copy kept in the office of the mayor or city clerk.

Section 1037 relates to "premises unfit for habitation." I am led to believe from the filthy and unhealthy condition of many residences, office buildings, jails, etc., in most of our cities that the responsibilities of local boards of health as placed upon them by this most important section are not appreciated as they should be, or are far from being properly met.

It is a fact well known to physicians and sanitarians that diseases of various kinds, especially those dependent upon filth combined with poverty, are the almost constant guests in the homes of the poor, as found in many, if not most, of our Iowa cities. This feature of the law should have more consideration and faithful observance both from a humane as well as from an economic standpoint. These unfortunate people are generally from necessity, if not from choice, found segregated in the most undesirable and most unhealthy portions of our cities, a fact that adds greatly to the amount and character of their sickness when supplemented with filthy and often with vicious habits. The local board of health is under the law, responsible for much of this sickness if it does not carry out the provisions of this section. The section referred to is as follows:

"The board, when satisfied upon due examination that any cellar, room, tenement or building in said city, occupied as a dwelling house, has become, by reason of the number of inhabitants or want of cleanliness or other cause, unfit for such habitation, and a cause of nuisance or sickness to the occupants thereof or to the public, may issue a notice to the occupants thereof or any of them, requiring the premises to be put into a proper condition as to cleanliness or health, or may require the occupants to remove from the premises, within such time as the board seems reasonable. If the persons so notified neglect or refuse to comply with the terms of the notice, the board may cause the premises to be properly cleaned at the expense of the owners of property, or the board may remove the occupants forcibly and close up the premises, and the same shall not again be occupied as a dwelling place until put in a sanitary condition to the satisfaction of the board."

The county ought to pay at least half the expenses of carrying out the provisions of this section, since the expenditures of the pauper fund would be greatly lessened thereby.

Sections 1038, 1039, 1040, 1041 and 1042 give in detail the measures required to prevent the spread of infectious diseases together with the legal procedures necessary to enforce these measures. In section 1044 it is made the duty of city councils to pass and enforce such ordinances as will enable the board of health to exercise all the powers conferred upon such board.

In addition to the above-named responsibilities laid upon the local board of health by the sections quoted, chapter 16, title 12, of the Code, relating to the State Board of Health imposes the following:

"To protect the people against rabid animals, and to proclaim and establish quarantine against all infectious or contagious diseases dangerous to the public and maintain and release the same, as may be required by regulations of the State Board."

To avoid a repetition of the duties enjoined by the sections previously quoted and to give the State Board authority to impose upon local boards and upon individuals added obligations having the force of legislative enactments, section 2572 was enacted. This section plainly makes it the duty of local boards not only to obey themselves, all the rules and regulations of the State Board but to enforce them as well, that is to see to it that others obey them. These rules and regulations are found in circulars 1, 2, 3, 5 and 8 as issued by the State Board and others as are announced from time to time in the Iowa Health *Bulletin*, the official organ of the Board.

In addition to the duties and responsibilities specifically expressed in the statutes and in the rules and regulations of the State Board of Health, there are others equally important that suggest themselves to a board or commission to whom are entrusted the lives, health and safety of the people. It seems there can be no more important function entrusted to any official or body of officials than that of the prevention of sickness, accident and death.

Every defective sidewalk; every sidewalk covered with ice; every building or bridge believed to be unsafe; every hotel, office or other building without adequate fire escapes; every decayed tree overhanging a public thoroughfare; every stagnant pool, affording a breeding place for mosquitoes, and omitting noxious vapors; the great volumes of coal smoke vomited hourly from our chimneys; every filthy, stinking alley with its garbage and rotting manure; noxious wastes from creameries; filthy stockyards; every cess-pool and neglected privy, in fact everything that pollutes the air, earth, water or food, is a menace to the public health and safety and legitimately comes within the perview of a local board of health. There is scarcely a week passes but that complaints from one or more places are laid before the Secretary of the State Board of Health to the effect that a nuisance dangerous to the public health exists; that the attention of the local board has been called to it; that no attention has been paid to the appeal for relief, and asking the State Board to come to their relief. The reply always has been that the State Board has no jurisdiction whatever in such matters, with the further statement that the attorney general advises that where a local board neglects or refuses to investigate and abate an alleged nuisance, if believed to be a menace to the public health, that complaints should be filed with the grand jury which has co-ordinate authority in the abatement of nuisances.

EXPENSES

Perhaps I ought to say a word relative to expenses of local boards of health especially in the enforcement of quarantine. Fortunately the law at present is more explicit as amended by the last general assembly. There seemed to be no question in the Code of 1897, as to the payment of such expenses when incurred by townships but there always has been

a conflict as to whether the county should be held responsible in any way for the payment of bills made by municipal boards. As a result many cities, at great inconvenience, were obliged to meet enormous expenses in their efforts to protect not only their citizens but those of the county outside of the corporation limits.

The last general assembly repealed the entire section 2570 and enacted a new one in its stead which provided that all such expenses shall be certified to by the president and clerk of the local board whether city, town or township and laid before the county auditor for action by the county supervisors at their next meeting. If the parties receiving the services are able to pay, that fact is to be set forth by the local board and the amount due from each such party is to be definitely stated. It then becomes the duty of the Board of Supervisors, unless the bills are evidently extortionate, to pay all the bills whether the parties receiving the services are able to pay or not and when the board levies the general taxes it shall "levy on the property of the city, town or township, from which such expenses were certified a sufficient tax to reimburse the county to the extent of one-third of the amount paid it under the provisions of this act."

It then becomes the duty of the county to collect from parties able to pay, and not the city, town or township; and when this has been collected by the county one-third of the amount received therefrom shall be credited to said city, town or township.

The advantages of this change in the law are that it insures the prompt payment of all such expenses; both municipality and township have the same standing before the law; the county pays two-thirds of the amount and the collection of any part of the claims from private parties devolves upon the county. The statute specifically states that "all expenses of a local board in establishing, maintaining and raising a quarantine, including fumigation, disinfection and the building and providing any pest house, detention or other hospital, shall, after being properly certified to be paid as above stated by the county."

There is to my mind, however, a glaring conflict between section 2570-a and 2570-b and 2571 as shown in the Supplement to the Code as adopted by the Twenty-ninth general assembly. Section 2570-b should be repealed and all of 2571 after the word "it" in the tenth line.

An important regulation as amended by the last general assembly is section 2572 of the Supplement, which declares that "if any local board of health shall refuse or neglect to enforce the rules and regulations of the State Board of Health, the State Board of Health may enforce its rules and regulations within the territorial jurisdiction of such local board, and for that purpose may have and exercise all the powers given by statute to local boards of health; and the peace and police officers, of the state, when called upon by the State Board of Health to enforce its rules and regulations shall execute the orders of such board. All expenses incurred by the State Board of Health in determining whether its rules and regulations are enforced by a local board of health and in enforcing the same when a local board has refused or neglected to do so, shall be paid in the same manner as is now provided for the payment of the ex-

penses of enforcing and such rules and regulations by local boards of health."

This is a very wise and judicious provision as it insures to any community the enforcement of the rules and regulations of the State Board either by the local or State Board itself, and insures the pay of the State Board should it be called upon to assume the duties of the local board. Very few local boards will place themselves in a position to be supplanted by the State Board as such action would not only be humiliating but much more expensive. There have only been two or three instances where such extraordinary measures have been resorted to by the State Board but in each case the results have been highly satisfactory.

The law in regard to the location of pest houses or hospitals declares that when a dispute arises relative to the location of such buildings the President of the State Board shall appoint three members of the State Board who shall investigate the facts and make such order as the facts may warrant and their conclusion should be final.

VACCINATION

A school board in Lucas county excluded the unvaccinated children of a family from the public schools in accordance with the rules and regulations of the State Board of Health. The parents of the children brought two suits against the school board, one to compel the board to admit the children and the other asking damages for depriving the children of the benefits of the public schools. The first suit was tried before Judge Vermillion and he decided that the State Board had exceeded its authority in making and trying to enforce such a requirement. The judge said the legislature would have the authority to make vaccination compulsory but has not seen fit to do so, nor has it invested the State Board of Health with such authority that under the police powers of the state, the State Board of Health may require, and local boards of health would be bound to enforce the requirement that when smallpox has appeared in any locality, or when a locality is threatened with such disease unvaccinated scholars and teachers may be kept out of schools until all danger is over; that, however, when the disease has disappeared and all danger is over, parties having been thus excluded should be readmitted. In view of this decision the State Board has so modified its regulations respecting vaccination as to authorize local boards to consider the necessity of applying the rules which are still in force, in their respective localities, and to act accordingly.

OBEY THE LETTER OF THE LAW

A late decision rendered by the Iowa Supreme Court should impress upon local boards of health the importance of complying with the letter as well as the spirit of the law. Suit was brought against Dr. S. C. Kirby of Grand Junction for violating the quarantine regulations of the state and local board of health by leaving his premises when quarantined for smallpox and thus exposing others to the disease. The case was carried through the district to the supreme court which decided in favor of defendant Kirby, on the ground that the law requires a "written" notice

from the physician as to the existence of an infectious disease and the necessity for the establishing of quarantine. The evidence in this case showed that no "written" notice was served on the mayor and that the quarantine was established by the mayor upon a mere verbal notice. Hence the verdict was in favor of the defendant—the law not having been complied with.

To a health department striving to protect the lives and health of the people this may seem to be an unreasonably technical decision and yet there is no question but that when the law defines a particular way in which a duty shall be performed the only proper way is to do it exactly in that way. It is not long since an Iowa court decided that a party could not be held for violating the quarantine regulations of a local board because it was shown that the quarantine card—the danger signal—was not eighteen inches square as prescribed by the rules and regulations of the State Board of Health.

In another case a physician was prosecuted for not reporting for quarantine a case of diphtheria. A neighbor not knowing of the existence of this disease because there was no danger signal—the prescribed quarantine card—visited the place with a child. The visiting child contracted diphtheria and died and the physician attending the first case was prosecuted under section 2573 of the Code. It was shown that the local board of health—a district township—had failed to publish or post the rules and regulations adopted by them respecting quarantine and the reporting of such infectious diseases and the presiding judge gave a verdict for the defendant doctor. It is very important to obey the law in the letter and in the spirit.

And now, gentlemen, in conclusion let me assure you that the State Board of Health has the highest possible regard and the most cordial feeling for every local board in the state. Some of its rules and regulations may seem not only arbitrary but useless. The State Board has been entrusted with a general supervision of the lives and health of the people. You are made the lieutenants of the State Board in its conflict against transmissible diseases. Just as in military battle the general officers can do nothing without the aid of his subordinate officers and of his privates, so in this sanitary conflict the State Board must depend upon you. The rules and regulations adopted and which you are asked to obey and enforce are not experimental, they have passed that stage. They have been demonstrated to be most effectual, and where they are promptly and faithfully carried out a large class of diseases, most of which are more or less fatal are either prevented, greatly restricted or promptly stamped out. Let us therefore stand "pat" as the politicians say—stand shoulder to shoulder in this great conflict and thus bring happiness and prosperity because of health and strength to every home possible.

VI

SANITATION AND HYGIENE OF CITIES

BY DR. GEO. P. NEAL, FORT MADISON, IOWA

Gentlemen, this meeting of the Health Officers of Iowa is an initial movement of prime importance. History is but a record of incidents and occurrences. It is an assemblage of the conservators of the health of the people of the domain of the great state of Iowa. Iowa is a healthful, fruitful state. Iowa is noted for its brave men and its fair women. Iowa ranks first in all that is best. Iowa produces much of everything, many times beyond her needs. Iowa men are in demand—in high places they are in evidence. No class of men have done more to mould the thought and opinion of the state than the doctors.

Gentlemen, the Health Officer is the holder of the most important office in the city, town or township. Health is of much more importance than wealth. Health is the first requisite. Cato, the censor, said: "I would rather my daughter should marry a man without an estate, than to marry an estate without a man." Health is conducive to nobility of character. Health produces wealth.

How do the streets become so dirty? This question is often asked—Where does all the refuse and dirt come from? It seems queer, until you notice the growth of piles of refuse that evolve into nuisance in the streets. Take one of the paved streets of Fort Madison, Iowa. It is Saturday a. m. The street gang have swept, raked and scraped the refuse into piles, the wagon has driven up and the heaps are loaded and all is hauled away, leaving a nice clean street. In front of the post office, 10 a. m., a business man comes out of the office, tears the wrapper off of a circular, crushes it in his grasp and throws it into the street. Next a doctor finds a journal devoted to the propagation of Christian science in his box. As soon as he discovers the nature of the print, he throws it into the street and goes his way. This is repeated, and in a short time a bunch of paper collects. A farmer drives up to drop a letter into the office. He drags a little straw out of his vehicle and a little half dried mud drops from his boots. A dude comes along and throws a fragment of a cigarette into the growing heap. A little skinny boot-black adds a banana peel as his contribution. A wagon with muddy wheels stops,

and much mud is added to the growing accumulation. The street sprinkler comes along and dampens the mass. More paper is added. The wind adds some leaves and dust, an orange peel finds its home in the midst of all, the milk wagon halts. The boy goes into the office. He tarries to chat with a friend. The horses add some partially digested oats to the collection. It grows rapidly. The wind blows a little excelsior from a side door of the furniture store. The sprinkler comes back and more moisture added more cigarettes and cigar stumps, with a circular from a "Get-Rich-Quick" concern, a strawberry box, some cotton twine, a rag gets into the heap, a broken bottle, a rheumatism cure circular, some more horse manure. An Irishman comes along, and seeing an English sparrow dissecting, disintegrating and partially devouring the horse manure, takes a fall out of the poor bird, simply because it is of English origin. He with an oath throws a quid of tobacco into the heap. He expectorates and strikes the center. By the time the mass is dampened down once or twice more, with more cigar and cigarette relics, it gets into shape to really receive supplies, and the powers of cohesion are made manifest. At this stage, it is astonishing how many people will throw something into the heap. Every other man will spit at it, and spit viciously, as though shooting at a target. A paste board box gets into the heap. The lid is off, the sprinkler partially fills it, a team stops, more horse manure is added. The area increases, it begins to take on more growth. It is taken for granted by every careless passerby that this is a legalized dumping spot. Torn envelopes, wrapping paper, more twine, more peelings, more dirt, and more tidbits and refuse find a resting place. By 2 p. m. the pile begins to stink. It gives off a vapor, it gets still muddier, it becomes suggestive of filthy associations. The English sparrow considers it unsanitary and goes to fresher fields. By late afternoon, the pink, red, white, blue and buff papers, with the straw, sand, expectoration, manure, twine, leaves, cigar and tobacco, straw, mud, and moisture have formed a mass which was truly odoriferous, loathsome, disgusting to behold, a menace to health, and a reflection on twentieth century manners.

It is an object lesson. It shows want of respect for municipal authority. While this nuisance is being created, the gentler sex is not idle. When it comes to creating a nuisance, there is always a woman in evidence. Walk down an alley in the residence portion, and see what the gentle housewife has cast into the alley in the rear of the home. An old pair of shoes, a defunct fowl, a bucket of rotten potatoes, slops galore, a lot of old wall paper, some tin cans, a few broken bottles, some old rags, a piece of carpet, a dead rat, trimmings of a rose bush, a faded bouquet, a bunch of onion tops, a dirty newspaper, night refuse scattered promiscuously over this unsanitary salad, and Mrs. A. no doubt thinks and fully believes that she has placed her premises in a good healthful condition.

"Over the fence is out." This was recognized by the school-boy when engaged in a game of town ball. In the early days of the career of the writer, especially so. When the health officer finds the above condition of things, in an alley, and issues a notice to clean up or abate, the gentle,

meek and weaker vessel is transformed into a she-devil of magnificent proportions.

It is my observation and experience that to be a successful health officer, one must of necessity be endowed with the wisdom of Solomon, the strength of Sullivan, and the determination of Satan; at the same time be the embodiment of Good Samaritanism. His very presence must of necessity be a "bluff" of the first magnitude, inspiring respect of law and authority, and fear of its violation. He must of necessity occupy the position of judge, advocate, jury, and prosecutor at the same time. He must be as "wise as a serpent, harmless as a dove," on the one hand, and on the other a "long-clawed, strong-jawed, tough-hided devil." The more he magnanimously looks after the health of his constituency, the more cheerfully he incurs their hatred. He is condemned positively if he does some work, comparatively if he does a little more, and superlatively if he manfully enforces the rules of the laws of health.

The proper time to form character is previous to birth. The selection of the parents and grandparents if of all things the most important. Like begets like. The mother of Napoleon Bonaparte had a strong desire to give birth to a son who would become a great warrior. She read of heroic deeds of warriors bold, hung pictures of battle on the walls where they met her every gaze. She thus bred the greatest military genius the world has seen. The Greeks were aware that genius or beauty could be produced at will. The Greek mother was surrounded with most beautiful pictures, everything was suggestive of beauty and high art. The result was the growth of a nation of perfect figures—Apollo, Venus and Diana. What can be expected of the offspring of a neglected mother, who lives in squalor and poverty, a leaky roof, an unpainted house, with broken plastering, a foul privy, impure water, impure food, poor clothing, broken windows, smoky chimneys, nothing to cheer, not a suggestion of the bright side of life, or even a gleam of the sunshine of a better life. The offspring consequently are scrofulous, semi-demented cowardly degenerates, a menace to society and a burden upon the community.

The needs of the nation demand a strong, self-reliant, self-sustaining, self-respecting type of citizenship, clean of mind as well as clean of body. The citizen who does not work to place his town or city upon a higher plane, is not only a drone, but he is a nuisance. His room is much superior to his company. There is no excuse for filthiness—none should be expected or accepted. The poor can rise, if possessed of the proper spirit. Many of our presidents, who have been chosen to the first position in our land, were born in log cabins with dirt floors. The floors, however, were kept clean, the future magistrate being compelled to go to bed while his tidy maternal ancestor put his only shirt through the wash. The mother, in every instance, had a desire for her son to rise in the world—Jackson, Lincoln, Johnson, Grant and Garfield, were of this class. The mother of each one of them, kept them clean. They were born, bred and nourished upon the frontiers—children of nature. During their childhood they communed with nature and drank of her inspirations. Crowded cities do not produce heroes or statesmen. The city-bred youth too often loses his individuality. He may play pool or billiards and smoke cigarettes, but he

scarcely has the courage to conquer worlds or aspire to become a ruler of men.

To sustain the great military establishment and the great commercial enterprises of the world, it is necessary to go to the rural districts to procure the brain and brawn. There seems to be a lack of stamina in the urban youth, in gait, in the bearing, voice or frame. The muscular system is rarely fully developed or well strung. They are not of the caliber from which we may expect either a vigorous or healthy offspring. They are not adapted to the strenuous life. The urban is more social, but in individuality he is much inferior to the ruralite. The hope of the nation in the future will rest largely upon the rural population. The city-bred youth is much like a caged bird; he lacks the symmetry of form, motion and mind. There is no fresh air for him, he breathes his own exhalations and that of his neighbors, over and over again. Want of space in which to develop both body and mind are productive of limitation of thought and ambition; there is a tameness, a sameness, a monotony; there is a lack of the ardor and impetuosity of the rustic. Man can not arrive at his full stature in the crowded cities. To develop a being after the likeness and image of God, the environment must be suggestive of the grandeur and glory of the Creator.

Man is the creature of his environment; in mind, action, development, he is largely a creature of circumstance, from birth to death—his pathway in life is not always of his own choosing.

Hygiene is strictly a French word. The goddess of health, Hygeia, of the Greeks, was the daughter of Aesculapius, god of medicine. Her name was mentioned with the other deities in the Hippocratic oath, which every loyal physician is required to take, as one of the Aesculapiadae. "By Apollo, the physician, by Aesculapius, by Hygeia, Panacea, and all the gods and goddesses."

Hippocrates was the first of the early writers upon hygiene. In his work on "Air, Waters and Places:" A treatise in which the influence of climate and locality, not only upon health, but upon the character of races of men was pointed out clearly and sagaciously. Plutarch also wrote early hygienic treatises. Positive measures of public hygiene were instituted in Athens by Ooron, who is said to have dissipated the causes of the plague by fires burned in the streets. Empedocles, afterward found it possible to destroy or impede the action of malaria, in one instance by draining a swamp, and in another by building a high wall to protect an exposed town.

The wall around Rome was sixty-five feet high, sixteen feet wide, and there were twelve gates which closed perfectly tight.

There was a yearly visitation of cholera at Rome, until the authorities caused the gates to be closed at sundown. When this was done it shut out the cholera.

Herodotus was so famous for his application of gymnastics and regimen for the improvement of health, that Plato accused him of doing an ill service to the state—by keeping people alive who ought to die, because, being valetudinarians and below par, they cost more than they were worth to the community. Rome showed her appreciation of sanitary

part by extensive drainage of the base of the hills upon which the city was built; by the magnificent sewer Cloaca Maxima, of which a part is yet left, the oldest ruin in Europe, thirteen feet in diameter at the outlet; by the aqueducts, and by the suburban interments, whose number is attested all along the Appian Way; and by the appointment of the aediles, officers whose duties were to inspect and regulate the construction with a view to salubrity and safety of all public and private buildings. Regulations of internal sanitary police in regard to impurities of all kinds were also highly advanced among the ancient Romans. Celsus and Galen were also writers upon hygiene. Moses, the Hebrew, in the Levitical code, which is acknowledged to be of divine origin, extended the provisions required for the health of the children of Israel. The fact that he retained some of the ritualism of the land of Egypt is no disparagement. His education was that of an Egyptian of the royal family, by reason of his environment, he necessarily drank of the wisdom of the priesthood, whose knowledge of preventive medicines and hygienic principles, was of the highest order. The great pyramid of Cheops is most admirably arranged for the purpose of ventilation of its dark interior chambers.

Egypt was the seat of the most potent civilization of antiquity. It was the cradle of knowledge and learning of the ancients of the present known world. Everything modern necessarily bears the finger marks of paganism—the days of the week are a daily reminder of the pagan; the months were divided and decided by the pagans; most of our church ostentation and tinsel are but a continuation of paganism. Out of the unknown and undefinable after many evolutions, there has sprung the animal—man. Out of this man, trained for centuries under the standard of the heathen, there is evolving a much superior being under the guidance of the Supreme Being.

Man can never rise to the height or image of the Creator until he lives in accordance with the strictest hygienic and sanitary laws. No dirty, filthy, unsanitary denizen can expect to pass the pearly gates. The pious Jew, who observes the Mosaic law concerning food, ablutions and other purifications and segregations of persons with certain diseases, which are imperative and precise, stands a much better chance of a final reward, than the man who during the period of his earthly sojournage, was the recipient of but two baths, at entrance and exit, one at birth and one at death. The most signal triumph of preventive medicine, we may rank the introduction of vaccination, by Dr. Edward Jenner, in 1798. There is nothing to equal it in the annals of medicine. The discovery of the properties of Cinchona in the cure of malarial disease, is probably a close second, but there is no equality, no comparison. Smallpox when vaccination, is properly attended to and rigidly enforced, is no longer to be dreaded, as in the olden time, when an attack was the occasion of despair and the ultimate result, death.

Prof. Henry Hartshorne, in an introductory lecture to a course of hygiene in 1886, to the class of the University of Pennsylvania, said: "Without any intent to arrogate more than belongs to the department of hygiene, it appears to me not too much to say, that it is hardly second in intrinsic importance to any of those taught in the university. If preven-

tion is always better than cure—if the enjoyment and strength of life depend not only on rescue from dangerous diseases, but also on the possession of vigorous health—and if a large part of sound practical therapeutics consists of measures rather hygienic than medicinal, as I believe, then I think my proposition is sustained. Should more be wanted to enforce it, it may be found in a relation of sanitary science, public hygiene to the vitality and mortality of communities. Sanitary science is essentially state medicine. There is no other therapeutic for masses of men, and when we compare results involving large numbers of human beings, does not preventive medicine exhibit triumphs greater than curative practice? I have no wish to deprecate these; I rejoice in them all. But look at the facts. In Constantinople in the year 543, 10,000 people for a time died daily of plague. In eight years from 1345, plague destroyed in all in various places, about one-half of the then existing population of the globe, now from hygienic measures, there is no reason to doubt, from the application of sanitary principles, it has come that plague has been banished from Europe, and almost extinguished in the East." These words were spoken thirty-seven years ago. He continued: "Let us glance now for a few moments at the history of our subject. Hygiene as an art is older than therapeutics; as the avoidance must have been from instinct as well as intelligence, an object sought before the discovery of means for its medicinal relief. First hygiene, then surgery, then medicine; was the natural and historical order. Mr. Chadwick asserts that in a well marked instance involving a number of families, intemperance hopeless to all appearance, in a low insalubrious quarter of London became curable—yielded to reform under effort—when the subject of it was transferred to an open healthful and comfortable locality.

Our bodies and our spirits are held fast in close companionship. To raise the one is to help the other. Past all doubt, sanitary improvement promotes domestic, social and moral reform. The Board of Health is a good handmaid or helpmate for the Board of Missions. Bread in the one hand and the Bible in the other will do more for the feeble, suffering and degraded poor, than two Bibles and no bread.

In France, in 1772, the annual proportion of deaths was one in twenty-five; in 1845-46 one in forty-five. The mean duration in the same country was in 1806 twenty-eight and one-half years; in 1866 it was thirty-three and six-tenths years. In London in 1685—not a sickly year—one in twenty of the inhabitants died; now it is but about one in fifty-five. Macaulay, in his history, estimated that the difference between London in the seventeenth and London in the nineteenth centuries is as great as between the same city in ordinary years and those in which the cholera prevailed. In the sixteenth century at Geneva, the mean probability of human life was eight or nine years; in the seventeenth, thirteen to fourteen; the eighteenth, about thirty; and in the nineteenth, forty to forty-five. Sanitation and hygiene contributed to this result, after giving due allowance to the advances in therapeutics, surgery and obstetrics.

In 1850, the mean duration in New York and Philadelphia was but between twenty and twenty-one years. How long should we live? In China, men who have reached the age of 70 are designated as "rare birds;"

those who have reached the age of 90 years are "old loiterers." Man's life will hardly be prolonged beyond a century. We should be content with the three score and ten. What an old loiterer our ancestor, Methuselah, must have been. He was a whole flock of rare birds. It has been said that a woman is as old as she looks, a man as old as he feels, or as old as his arteries.

The conditions of health as unfolded by physiology may be briefly stated to consist of five necessary requirements: air, exercise, water, diet and nervous repose. These are undeniably essential to the preservation of health. No human being can possibly continue in a fair state of health when deprived of a just proportion of any one of them. Health is the faculty of performing all actions proper to a human body in the most perfect manner. Voltaire defined a physician to be an unfortunate gentleman who was constantly required to perform a miracle, viz: "to reconcile health with intemperance." The good may die young, but the prudent live longest.

Americans are growing longer-lived as is shown by the vital statistics of the United States census of 1900. It is shown that there has been a decrease in the death rate for the country in the past ten years of about 10 per cent and in cities of the first and second class some curious facts are shown.

Among the large cities, Chicago shows the smallest death rate per one thousand of the population: 16.2 for 1900, as against 19.1 in 1890; St. Louis, 17.9 against 17.4 in 1890, a slight increase in rate during ten years. Boston is third, with a higher rate, that of 20.1, although it is reduced from 23.4 in 1890. New York City comes fourth, with 20.4 as against 25.3, showing a great decrease in the ten years. Baltimore comes fifth, with 21 as against 22.9. Philadelphia comes next, 21.2 as against 21.3 in 1890. Buffalo shows a better death rate, 14.8 as against 18.4 ten years ago. Milwaukee 15.9 as against 18.8; Detroit 17.1 as against 18.7; Cleveland 17.1 as against 20.2 in 1890. Cincinnati comes next with 19.1 as against 21; San Francisco 20.5 as against 22.5 in 1890.

Some of the southern cities show a decided increase in the death rate. New Orleans the enormous rate of 28.9, while in 1890 it was 36.3; Mobile 25.9; San Antonio 23.6; Atlanta 26.6; Savannah 34.3, and Charleston 37.5, which is about twice the rate of other cities of the same class.

These figures show definitely that more care is taken in sanitation, in the science of living, the introduction of better methods of life, advances in practice and surgery, etc.

I will give the death rate among the Boer prisoners confined in the camp in South Africa, where there was an absence of sanitation, hygiene and the science and art of living. Nostalgia was in all probability an important factor in the awful increase in the death rate of adults, but this could not have been the case in children and infants. I will give the figures as an exhibit of the results of want of hygiene and sanitation. The figures will "stagger humanity." Children's death rate in September, 1901, in camps maintained by England in South Africa, 433 per thousand, per annum; death rate in September, 1901, of all occupants of camps, 264 per thousand per annum. The death rate of all occupants of

camps during June, 1901, was 190 per thousand per annum. Death rate of all occupants of camps during July, 1901, was 200 per thousand per annum. Death rate of all occupants of camps during August, 1901, was 211 per thousand per annum. Death rate of England and Wales, 18 per thousand per annum. "Comparison is odious."

The hellishness of war is visited usually upon the innocent and the childhood of the countries involved. During the Mexican War, our armies lost from 10 to 12 per cent by disease; the allies in the Crimea lost 25 per cent from the same cause. The Federal army during the Civil War lost about 6 per cent by disease. It would be no exaggeration to say that the number of lives saved was greater than the whole number lost by disease and battle. This result was a signal triumph of the excellent hygienic system adopted.

The *Medical News* says that Guatemala, with a mortality of forty-one in 1,000, is said to be the least healthful country in the world; while New Zealand has the lowest death rate, eleven in 1,000. A recent communication to the state department by Mr. Squires, United States Minister to Cuba, states that since January 1, 1899, the beginning of the American occupation of the island there has been a continued decline in the death rate, and that the rate, 21.19 per thousand for the year just ended is the lowest in the history of the island, between 1870 and the present time. The highest death rate was 91.03 per thousand. This occurred in the year 1898, the year of the Spanish war, when the reconcentration camps were in operation and many people starved. The lowest rate under Spanish rule was 29.30 per thousand in 1885, and the average rate for the thirty years ending with 1900 was 41.05 per thousand. It is believed that if the present good sanitary conditions prevail, the present low rate will be maintained.

Cleanliness will preserve towns and cities from epidemics; to prevent such visitations, there must be cleanliness of the streets, cleanliness of the courts, and of the alleys, cleanliness of the apartments, cleanliness of the person, and, it may be proper to add, cleanliness of the mind. Freedom from remorse, freedom from the straits of poverty, freedom from vicious habits are also conducive to longevity.

New Orleans and Havana, Cuba, are striking examples of the value of civic cleanliness, the vigor of military rule being in each instance the prime factor in inaugurating the sanitary condition which brought about the truce which held yellow fever in abeyance.

"The degree of public health of a town or city is measured by its cleanliness, and its capacity for health depends upon its capacity for cleanliness." The death rate from inevitable causes, as old age, casualties and forms of disease that are not preventable, is seventeen in 1,000. The twentieth annual report of the Registrar General of England says: "Any deaths in a people exceeding seventeen in 1,000 annually, are unnatural deaths. If the people were shot, drowned, burnt, poisoned by strychnine, their deaths would not be more unnatural than the deaths wrought clandestinely by diseases in excess of the quota of natural death, that is in excess of seventeen in 1,000 living."

Unripe fruit, stale spoiled fruit, spoiled meat or fish, and vegetables, impure milk, impure water, food inadequate in supply, and intemperance are notable causes of mortality. After we die, and die we must, what shall be the method of disposal of the mortal remains? "Dust to dust, ashes to ashes." Cremation is sanitary. It is all that will prevent the globe from becoming one vast cemetery. There is at the present time, about 1,600,000,000 inhabitants of the globe. Taking the death rate at seventeen per 1,000, the number of deaths annually will reach 35,000,000, one-half of the population of these United States. Fifty million is probably the nearer approach to the annual death loss of the people of the present known world. Cremation is necessary. It is the only method that will be rational as well as sanitary.

"This earth and ocean, all
Are the tomb of man;
And all the planetary host of heaven
Are shining on the sad abodes of death,
Through the still lapse of ages.
All that tread the globe
Are but a handful to the tribes
That slumber in its bosom.
Millions, since first
The flight of time began, have laid them down
In their last sleep."

VII

SOME NEEDS OF THE DEPARTMENT OF HEALTH*

Members of the meeting of the Iowa Health Officers and City Physicians:

The branch of science called the Department of Health like all branches of medical science is far from being complete. Its needs are many and varied. And as civilization advances the scope of department of health broadens. As required needs are supplied, others under different and advanced conditions spring up. But advancement in all phases of science and art continues, so that if we are to keep pace with the movement of education we must labor energetically and with extra force. There cannot be a nobler calling than the prevention of disease and the protection of general health.

The needs of the Department of Health are many. We cannot hope for complete perfection in this department, but we do hope for many changes for the better.

There is a lack of union in the performance of the various duties between different boards, in many cases, ignorance of the law, lack of support by the people toward the officials, etc.

A more united co-operation between the township trustees and city board of health is desirable, because it would prevent many contagious diseases from being carried from place to place. At the present time this lack of union between the rural boards and those of the city is noticeable. This is caused partly by the failure on the part of the rural board to take proper steps in isolation and quarantine. Many bad exposures in scarlet fever and smallpox are not quarantined and the result is transmigration of the germ from one part of the country to another, principally from the country into the city. This failure often amounts to total neglect. In many instances the trustees take it unto themselves to make their own laws and rules contrary to those who are better qualified to know. The lack of proper observance of the rules of health is partly due no doubt to the ignorance of the proper steps, etc., and partly also to the complexity of the health laws. The office of a township trustee is not one of honor and gratitude but on the contrary one of trials and

*Read by J. A. Valenta, M. D., Iowa City, at the First Annual Meeting of the Iowa Health Officers and City Physicians held at Des Moines, June 16 and 17, 1908.

tribulations with a poor financial support. Hence many good and intelligent men who would make model officers will not accept the same for the reason above stated. Therefore the advisability of taking the office of the Board of Health in the townships out of politics and selecting men who have the qualities and who are competent to protect the public health and pay them a sufficient salary to retain them. What do a few dollars amount to if the public health can be better protected and many lives saved?

Another drawback to the success of board of health in our rural districts and in our smaller cities also is the ever changing board. No member stays in the office long enough to make himself efficient. If the term of office was longer with a good salary these men could be retained and the efficiency of the board become better year by year.

Much of the success depends on our rural physicians. In the city most of the work is left to the health officer and city physician and he is greatly responsible for the carrying out of quarantine, fumigation, etc. But in the towns, villages and rural districts where no health officer is to oversee the work and advise in some matters, great deal of the responsibility falls on the attending physician. The board to a greater degree looks up to him for advice, and whether the advice of the physician is good and he is conscientious or whether the opposite is true, determines the proper or lack of enforcement of the public rules of health. Therefore the physicians of the state should all become familiar with the health laws and I would advise the teaching of this branch in the medical school under the department of medical jurisprudence. The state Board of Health ought to supply each physician with a copy of all the laws pertaining to public health and additional leaflets as changes are made. We need a general enlightenment, and education of the public. It is surprising how little the laity and even some of the practitioners know about the subject. In this age of asepsis and antisepsis where lives are saved that otherwise would be lost, is it not of as great importance to prevent disease? The laity must be educated. Old fashioned ideas and fogysm routed out. Many times the health officer or attending physician is met with so much opposition that he becomes discouraged and disgusted and lets the law go to fate. We must educate the general public that all these rules of health are for the protection of the public and not a money-making scheme. This phrase "money-making scheme" has often been uttered or hinted at and many of you have probably become familiar with it. The way to accomplish this is through the medium of the newspapers. The newspapers have become a general educator. Let men of ability and integrity (without their authorship being known, if they so desire as physicians are very modest as a rule), write articles in the leading papers and these be copied in minor ones giving the reasons for quarantine, fumigation, contagiousness of disease, etc. Let them see that prophylaxis is better than cure, also that if they do not observe the rules, that they are trespassing on the rights of others just as much as if they were living on other men's premises contrary to law or were hunting on forbidden grounds; also that if they impart the disease to some one else and the case ends fatally they are to a great extent responsible for his death.

One of the worst drawbacks in stamping out smallpox is the failure to employ a physician but conceal the case altogether for fear the physician would pronounce it smallpox and quarantine follow. This can only be remedied by the above treatment and a vigorous enforcement of the law for failure to report. I think the latter would probably have the desired effect more speedily than the former for when people think they would be fined or imprisoned they would be more apt to comply with the laws.

But sometimes the fault to report cases of contagious and infectious diseases lies not with the laity but with the physician. That such a state of affairs should exist is indeed pitiful. The physician should have the general public's welfare so at heart, that friendship and local ties would not prevent him from doing his duty. By this I mean those cases where doctors being the patients' personal friend or for some other personal reason does not report the case in order to save the patient and rest of the household from quarantine. In others, and this is sometimes true of old physicians who began their practice before strict quarantine regulations were required, we find this carelessness. They can't adjust themselves to the new conditions or do not care to; considering older methods better than "new fangled ideas." Such cases are almost hopeless for it is hard to teach an old physician anything if his receptive faculties are not open.

The paper on the wall of the infected house is supposed to be removed in every case of smallpox and scarlet fever. More trouble arises over the enforcement of this law than over any other. There seems to be no definite idea as to whose duty it is to pay for the paper and putting it on. Sometimes the owner gracefully accedes to stand the financial loss, but more frequently he gets stubborn, especially where he has a renter in the property and the house has been newly papered. So it seems to me that the clause about wall paper should be left to the discretion of the health officer in the city. Where very light cases occur and it is not deemed necessary, leave the paper on. It could be washed with bichloride solution, after fumigation with formaldehyde, and all germs would be killed.

All cities and townships need a detention hospital with proper accommodations and nurses. If this was the case all paper bills, etc., would be done away with and a good competent nurse could take care of several patients at once while members of families would not have to be quarantined so long and kept by the city. Many cities have temporary hospitals or pest houses for men but none for women. A township could have a hospital just the same as a city only on a smaller scale, where any cases of the township could be treated to better advantage than several scattered cases.

Vaccination should be urged more vigorously for it is an assured fact that vaccination helps to eliminate smallpox. If the general public could be made to see the benefits of vaccination instead of sore arms, smallpox would be a thing of the past. Very few severe cases are on record where good vaccination took place. In many instances it seems there ought to be a law where vaccination should be compulsory just the same

as quarantine. A general compulsion seems hardly advisable in this free and independent country. But it seems to me this subject of vaccination is treated too lightly by the laity and physicians also, the former considering it again one of those money making schemes. In an epidemic of smallpox the physicians ought to be paid by the county for vaccinations thus partly eliminating that money scheme.

We need a good organization of the Iowa health officers and city physicians where every city of any importance would be represented. We need a good membership of physicians who have this subject at heart. These meetings ought to be well attended and be mutual benefit to all so that when we depart to our respective homes we may be better prepared to take up our work. This is an era of conventions and to organize a good society for these conventions will be to supply a long felt need in the department of health. A committee should be appointed on legislation and it should be the duty of this committee to lead in the movement for changes in the legislation next winter. The work should not be left to the committee altogether but each member should lend his helping hand.

Municipal Sanitation.—We hear a great deal about municipal sanitation. But it seems to me there can be no such a state as perfect sanitation in the cities as long as the garbage question is not settled. How many cities of any size have a garbage system that is a success? If there are any I wish they would make it known so far and wide that we could all benefit from it. As long as no attempt is made to dispose of garbage so long will the alleys and back streets be a dumping place for refuse matter. Surely some practical way ought to be found to dispose of this matter. The health officer, marshal and senior alderman make their annual rounds, order the alleys cleaned, but how long do they remain so? The people must have some place to dispose of the garbage and the alley is the place. During the hot summer months it is any wonder if disease germs lurk in the back yard waiting for their victim? The health of the city could be greatly improved if municipal cleanliness would be the rule. I think a good plan would be for the ladies' improvement league which so many cities have nowadays and whose business partly is to stir up city officials to improve the parks, dispose of garbage question, etc., is to get as large a membership as possible of the ladies of the town and then make a rule (which all must obey) that each member is to keep her own premises clean including the back yard and alley. If this was done the work of cleanliness would be greatly facilitated. Their motto should be, "practice what you preach."

Water Supply.—Every town and city ought to have its water that is used for drinking and cooking purposes tested at least once a month. It ought to be tested by an expert and if found unfit for use condemned. Water companies should be bound by contracts to furnish sanitary water and if the water is unfit for drinking, from any cause (except some unavoidable excuse) they ought to be compelled to make better provisions. Typhoid epidemics in some of our cities this year were traced to the water supply. Where a majority of the inhabitants of the city are left to the mercy of city water, the purity of such should be a vital question

for our city fathers to deal with. The question of municipal or private ownership does not solve the problem.

Consumption.—This disease causes more young lives being sacrificed than any other disease and still very little has been done to prevent it. We seem to be helpless. That something ought to be done is apparent. The state ought to have a sanitarium where these consumptives could be taken care of. To allow the patients perfect freedom in which to expectorate bacilli broadcast for others to inhale seems no more just than to allow a smallpox patient the liberty to move wherever he pleases. I don't think it is doubted that the disease is communicated. Of course we cannot prevent a predisposition but we can isolate these consumptives. They should at least be isolated at home as much as possible and anti-sepsis observed in regard to the expectoration. If they are allowed in public places they ought to be provided with an antiseptic expectorating cup. A law should be passed to that effect by our State Board of Health and the violation of the same treated with a fine. An anti-expectoration ordinance should be found on the statute books and strictly enforced, but we have not become educated to that as yet. The physicians must begin at home first and practice anti-expectoration. Why a man of ordinary intelligence would want to sit and spit his strength away is a wonder, but we Americans do some foolish things.

Vital Statistics.—Some better system should be adopted for reporting births and deaths, but no system can become a success unless the physicians make it so. Two methods have been adopted. I think the first one, leaving it to the physician, was a failure and the present one, where doctors' responsibility ceases is not very satisfactory. The health officer must try all resources to keep account of deaths for his semi-annual report and then it is not complete and accurate. How can statistics be of any value? Where cemetery trustees or boards require no written permit for burial and no physician was employed (or if one is employed he is not compelled to report deaths), deaths and burials occur that the city clerk never hears of. No burial should be permitted until proper permit stating the cause of disease has been deposited with the clerk, and no removal of bodies from the city, without the same permit should be allowed. In this way a complete record could be kept and become of some value.

The Health Officer and City Physician must be just to his fellow physicians. In no place can the physician show his colleagues professional etiquette more than in the health officership. Many families after they have found a contagious disease or the attending physician has pronounced it smallpox, think they ought to drop their physician and employ the city physician. Or they do not feel satisfied with the attending physician's diagnosis and send for the health officer. In almost every instance the health officer could hold the case and do his brother colleague all kinds of harm. Where such a thing has happened the health officer regarded by the medical fraternity as their enemy. There is not the friendly feeling that is so necessary between the physicians and the health officer. This official must be very careful and judicious not to tramp on other's rights. There seems to be a little trouble to tell how far the health officer is justified in going and not provoke his fellow practitioner. This is especially true where all the physicians take care of

smallpox. Where all cases of this kind are relegated to the city physician the matter is a much easier one. The question often arises, should the health officer investigate a case of contagious disease when requested to do so by the people and not by the attending physician. For instance the attending physician calls a certain case chicken-pox. The neighbors all think it is a case of smallpox and that the attending physician does not know his business. They complain to the mayor and the health officer. Now is it the duty of the health officer to investigate that case, even if the attending physician and the people of the household do not desire it? I think it has been customary not to attend such cases and trust to the judgment of the attending physician. Are we always justified in doing so? We hear from many health officers that we are not. There are still few physicians left who side with the laity and think we have no smallpox in the State. To those, it seems the severe cases of the past year ought to be proof enough.

As there should be no doubt left in the minds of the medical profession this year about these contagious diseases being smallpox, we should all unite and call every case of smallpox by its right name and insist on it being recognized so. One of the reasons smallpox cannot be stamped out is the diversity of opinions among the medical men. Can we blame the laity if we cannot agree among ourselves? Now this should be done away with and a united effort made to stamp out this disease which has been pestering our State for the past few years. If we could form an information bureau or system where we could communicate with each other and look out for certain contagious diseases it would be of great help. We should notify our neighboring cities of an epidemic if it is raging in our town. It is not necessary to advertise it in the papers but just notify the health officer privately.

Health Officers' and City Physicians' Journal. We need an official publication which treats exclusively of matters of interest to us, and where reports, papers, etc., written by the different health officers and city physicians could be printed. A monthly would be sufficient in the start. If that would be impractical and impossible why not communicate with the State Board of Health and have them enlarge the *Iowa Health Bulletin* to suit our needs. The editorial staff could be enlarged with no limit of communicants. The work could be divided and a general superintendent, the Secretary of the Board, could look after the different divisions. There could be several departments—Bacteriological, Medical, Sanitary, Legislative, etc., with chief editor for each department. If the publication was paid out of the state treasury it could be scattered broadcast and much good result. Many of our valuable papers read at this session could thus be published and a far reaching and permanent good result. If we succeed in establishing a State bacteriological laboratory and a sanitarium for tubercular patients these two departments could publish these reports monthly. The present *Iowa Health Bulletin* is all right, but as it is now it is a publication by the State Board of Health. If we could add to it the publication of Iowa health officers and city physicians, our needs would be provided for. A committee ought to be appointed at this session to communicate with

the State Board of Health or devise some other means whereby this object could be carried out if it meets with the approval of the members.

Association of American Health Officers and City Physicians. If, after we perfect a good organization of our State, we can attract enough attention from our sister states and stimulate them for similar work; with state organization, a national or American organization could be effected. It would be necessary to unite a few states at a time, separately, as their interests would show and the grand finale be a society comprising the health officers and city physicians of the United States. This may sound a little previous and more like a fairy tale, but it is not an impossibility. That such a gathering would be of untold benefit is apparent when the different methods used by different states could be compared.

NOW TO RECAPITULATE OUR NEEDS

1. A more united co-operation between the township trustees and the city board of health.
2. Uniformity in the regulation of quarantine and the management of the same in the State.
3. Repeal of the regulation by the Board of Health compelling the removal of wall paper in cases of smallpox and scarlet fever, and leaving the question to the judgment of the health officer.
4. Taking the health officership out of politics and substituting qualifications irrespective of partisanship.
5. More compliance to the rules of health by the health officers and city physician himself.
6. Enlightenment and education of the rural districts in the regulations and rules of the Board of Health.
7. Election of a board of health in a township for a period of three or five years.
8. A better and united means of reporting deaths, births, contagious diseases, etc.
9. Better appreciation by the public of the work of the Health Department.
10. A detention hospital for every city and township with proper accommodations and nurses.
11. A good organization of Iowa health officers and city physicians, whose members will work for the good of the cause.
12. A practical way ought to be devised for disposing of garbage, etc.
13. Water supply should be pure and companies should be held responsible for the same
14. A State sanitarium for consumptives.
15. An anti-expectoration ordinance with strict enforcement.
16. Guard our fellow practitioners interests in assuming control of cases we are called upon to investigate.
17. A more united effort to stamp out smallpox by calling and insisting on its right name.

18. An information bureau or system to communicate between health officers notifying each other of epidemics.

19. An official publication of the Iowa health officers and city physicians, with a chief editor and subordinate staff with several departments.

20. A national union or association of American health officers and city physicians.

Now there are many other needs in the Department of Health, but I have endeavored to bring the most important to your consideration. That these needs, if supplied, would prove a blessing, few of you will probably doubt, but as to the best way and means to accomplish the end we may differ. But if each one of us will strive to pick out the method which has been shown to be the best, as accepted by the majority, and work out that method, regardless of our own personal opinion, success will crown our efforts. May we radiate outward our labors from this center city, the capital of Iowa, into every nook and corner of this commonwealth, and before another year passes by reap the fruits of labor performed by the faithful few for the perfect happiness of humanity.

VIII

THE STATUS OF THE HEALTH DEPARTMENT IN MUNICIPAL AFFAIRS

BY LOUIS A. THOMAS, M. D., HEALTH OFFICER, RED OAK *

The welfare of the State demands that the health and life of its citizens shall be paramount to all other interests, and in order to emphasize this fact our legislature has enacted laws creating State and local boards of health, investing them with almost unlimited authority and responsibility pertaining to the preservation of health and the enjoyment of life and happiness by its citizens.

This meeting, composed of the health officers of the various local boards of health throughout the State, may very properly contemplate the successes and failures of the past, endeavoring by judicious consideration of the various subjects to more fully perform the duties imposed upon them, by promoting uniform methods and proficiency of service among the local boards.

The statute provides that the mayor and members of the council of each city or town, or the trustees of a township, shall constitute the local board of health, and that each board shall appoint a competent physician as its health officer. It is the intent of the statutes that these local boards shall have supervision of and responsibility for the hygienic conditions of their respective territory, and in addition to enforcing the regulations of the State Board of Health, shall adopt such rules and regulations as are necessary to guard the well-being of the people within their jurisdiction.

The duty of the local board is not confined to the suppression of infectious diseases, although this is an important feature; they are required to safeguard the public in every avenue from which there is any danger to human life or health; the inspection of milk, water and food, prevention and abatement of nuisances, prevention of accidents, inspection of schools, inspection of plumbing, lighting, heating and

*Read before the Iowa Association of Health Officers at Des Moines, Iowa, June 16, 1908.

ventilation; to require that all buildings where people congregate are properly cleaned and provided with adequate exits and fire escapes; to maintain an accurate registration of births, deaths and burial permits, all of these properly belong to the department of public health. In some of the larger cities special inspectors are appointed to perform these duties, but in the smaller towns and townships either these functions are entirely neglected or devolve upon the marshal or some equally incompetent person.

The health officer is not a member of the Board; he is simply its medical adviser; he has no vote, and no authority except as provided by regulations adopted by the Board by which he is appointed.

Each board may determine the duties of its health officer, and should adopt a standing regulation for that purpose.

In towns and cities the mayor should be chosen chairman of the board, but in neither position has he any authority, except in one instance (the placing of a quarantine is specifically imposed by the statute upon the mayor).

The individual members of the Board have no authority whatever, and can only perform the duties of a board of health when assembled in session as such.

Each board should adopt verbatim the regulations of the State Board of Health, and in addition thereto such other regulations as are adapted to their own territory; these should designate the mayor and health officer the executive officers of the board and empower them severally and conjointly to enforce the rules and regulations of both the state and local boards. In the case of townships the executive officers should be the clerk and health officer. There should also be adopted a regulation authorizing the mayor of a city (or clerk of a township) to investigate the requirements of all persons under quarantine, and when necessary provide supplies, nurses and medical attendance, reporting the same to the board at its next meeting, when it may take such action as deemed necessary in each individual case.

When the board own a quarantine hospital the health officer should be made superintendent, and responsible only to the board. All matters pertaining to the public health should be entirely under the control of the health department, not jumbled with affairs of the council. The responsible head should be the health officer; the statutes require that he be a competent physician, and therefore the presumption is that he be the most competent physician available for the position. To fulfill the requirements he should not only possess adequate scientific knowledge, but be a man endowed with a large amount of executive ability, coupled with moral courage and keen judgment. When such a man is appointed he should receive the encouragement and support of the whole community; his salary should be large enough to enable him to devote the greater part or the whole of his time to the duties of the office, and place him in position to be independent of private patronage; for in many cases the public fail to appreciate enforcement of the health laws, especially in the matter of quarantine and disinfection. They are anx-

tious that their neighbors affected with or exposed to an infectious disease should be quarantined, but if they themselves happen to be infected the law at once becomes oppressive and unreasonable; they demand special privileges not contemplated by law, and the executive officer who is charged with enforcing the regulations becomes an object for all manner of abuse and incurs their permanent enmity. The health officer should be under a form of civil service, and retained in office indefinitely unless removed for cause. In some of the larger cities special inspectors are appointed to inspect meat and dairy products, plumbing, etc.—this is doubtless a good method, provided they are competent and under the direction of the health officer. In the smaller towns and townships sufficient funds could not be provided to pay the salaries of a number of competent inspectors, nor would there be enough work to keep them employed; therefore the health officer should be qualified to perform all of these duties himself, and compensated accordingly. One competent man well paid will always prove more efficient and economical than several who are under qualified and under paid.

Few township boards have knowledge of their duties and responsibilities; in many instances they are not even organized, and when necessity arises they are like a ship at sea without a rudder, blundering along in a most amazing and ludicrous manner; through carelessness or lack of knowledge infection is allowed to spread to other localities, causing financial loss, suffering and death, much of which would be prevented if there were some competent person with authority to supervise and guide their actions. Under present conditions many of the townships are a constant menace to the larger towns, owing to the inefficient manner in which they enforce quarantine and disinfection.

It would be well if all the local boards of a county could meet together once each year, at the county seat; they should then be properly organized and instructed in their duties. The publication of the *Iowa Health Bulletin*, and the distribution of circulars by the State Board, are not the most effective means of giving the instruction so much needed, though both are to be commended as useful aids; an hour's verbal instruction by a competent person will accomplish more and better results and perhaps encourage the members of local boards to read and digest the contents of these circulars, which now are often consigned to the waste basket unread.

A system of food inspection should be instituted and rigidly enforced by all local boards; especially in the case of meat and dairy products; all animals from which such products are derived should be proved to be free from tuberculosis and likewise the persons who milk the cows or in any way handle these products should be required to show that they are free from any disease. What can be more repulsive to the senses and detrimental to health than for persons affected with syphilis or tuberculosis to handle articles of food in any form, and yet this is not an uncommon occurrence today. Many serious outbreaks of typhoid fever in this as well as other states have originated in careless methods of handling dairy products, and the calamities resulting from such care-

lessness and ignorance demand stringent regulations and thorough inspection not only of the animals from which the products are derived and the persons handling them, but of the premises from which they come, together with the water supply used for cleansing the receptacles. No milk or butter should be sold unless the vender has a permit from the local board showing that the article is wholesome and free from contamination or adulteration. Where possible the services of a competent veterinarian should be obtained as inspector.

The public schools should receive especial attention from the board of health, for although the enforcement of certain health regulations devolve upon teachers and school boards many are negligent; the local board of health, having superior jurisdiction, should inspect the schools within their territory and insist that the buildings be maintained in a proper sanitary and hygienic condition, that all persons attending are cleanly, free from communicable diseases and protected by vaccination. Many children attending the schools are almost entirely neglected by their parents, and it is not an uncommon thing to find odoriferous cherubs who have not experienced a complete bath for months, mixed indiscriminately with children of refined habits; they are not only obnoxious to the senses but deleterious to the health of their classmates. The necessity of cleanliness should be impressed upon them, and each school house should be provided with bath and toilet rooms under the supervision of a matron, each child being required to bathe at stated intervals.

When disinfecting after infectious diseases every care should be taken to insure perfect disinfection of the persons and premises, and every article likely to have been contaminated; especial attention should be given to pet animals and the destruction of vermin of all kinds. To obtain uniform, thorough and economical methods the disinfecting should be done by some competent person under the direction of the health officer and the expenses defrayed from the general fund of the city or township; the public receive more benefit from disinfection than those just affected, and therefore all should share in the expense rather than impose a possible hardship upon an individual.

Regarding the methods of disinfection there is much material for discussion, but on this occasion time will not admit of an exhaustive treatise; however, before closing, I wish to express my entire satisfaction with results obtained from the use of Formaldehyde, both in the gaseous form and in solution. It is without doubt the most effective agent known to science, convenient to use, not injurious to the most delicate fabrics and thorough in its disinfecting properties. We have used formaldehyde by means of the Rex method entirely during the past four and one half years, and have yet to record a single case of secondary infection or destruction of property, added to which a valuable amount of property has been saved that under other conditions would have been destroyed.

This association should be organized with serious deliberation; it has long been needed, and its influence should be such as to command the attention and respect of the public; coming into intimate contact with the people and their conditions in every section of the State, the

need of means to obtain satisfactory enforcement of the sanitary laws is forced upon us. As recognized sanitarians the public will look to us to guide future legislation along these lines, and we should be unfaltering in our determination to wield our influence for the good of the whole state. As Iowa leads in most good things, see to it that she shall lead in all matters pertaining to sanitary science.

IX

DIRT, DISEASE AND THE HEALTH OFFICER*

BY DR. CHARLES V. CHAPIN, SUPERINTENDENT OF HEALTH, PROVIDENCE, R. I

When our honored and lamented Reed went to Havana and discovered that yellow fever was transmitted by the bite of a mosquito, and Gorgas, by the most brilliant sanitary experiment ever made, put an end to this disease in its very stronghold, they drove the last nail in the coffin of the filth theory of disease. But it is to be feared that the devotees of this theory are loath to bury it, thus violating one of their cardinal principles. It seems to me that it is the duty of the health officers of this country to see that this ceremony is properly performed. The filth theory erroneously assumed that the infectious diseases were caused by emanations, gaseous or otherwise, from decaying matter. Everything decaying, and everything offensive to the sense of smell, was dangerous. Everything dirty, everything nauseous, possibly, nay, probably would cause sickness. It was boldly taught that by removing all decaying matter the infectious diseases could be stamped out. For many years this idea dominated sanitary practice, the communicability of these diseases being almost entirely neglected. The English, who carried this notion of the danger of filth to the extreme, were assumed to be the leaders in public health work, and we blindly followed the leaders. Little stress was laid on personal cleanliness. It was believed that the municipality was chiefly responsible for infectious diseases. Pure air, pure water and a pure soil was the cry. Sanitary reform was engaged principally in protecting drinking water from organic contamination, in building sewers, in developing plumbing to a complicated and expensive art, in cleaning streets, in removing dead animals, in collecting garbage and removing household rubbish, in whitewashing and repairing tenements, in the regulation of offensive trades and the general suppression of all nuisances affecting the sense of smell. Of course there is some truth in the idea that dirt may be the cause of sickness. Some diseases are fecal borne and the danger from this source is sufficient to warrant

* Reprint, by permission, from Proceedings of the Thirtieth Annual Meeting of the American Public Health Association, held at New Orleans, La., December 9-12, 1902.

our treating all fecal matter as suspicious. The protection of water supplies and the construction and utilization of sewers prevents disease and is worth all it costs. The secretions of nose and mouth are so often the carriers of infection that the personal cleanliness which avoids danger from this source is a potent factor in hygiene. But with minor exceptions municipal cleanliness does little to prevent infection or decrease the death rate. Municipal cleanliness is no panacea. There is no more a royal road to health than to learning. It will make no demonstrable difference in a city's mortality whether its streets are clean or not, whether the garbage is removed promptly or allowed to accumulate, or whether it has a plumbing law.

There is no single procedure by which we can exterminate infection and prolong life. We have learned the true nature of infection and we have learned that the parasites which are its essence rarely propagate in filth and are seldom air-borne. We have, in the language of a distinguished American hygienist, been to a large extent, "barking up the wrong tree." Instead of an indiscriminate attack on dirt we must learn the nature and mode of transmission of each infection, and must discover its most vulnerable point of attack. We have learned that to fight typhoid fever and cholera we must keep human feces out of food and drink; in yellow fever and malaria we must destroy the *Stegomyia* and the *Anopheles*; in smallpox we must vaccinate, and in plague we must kill the rats. It is only along the line of patient investigation of each disease and practical deductions from ascertained facts that public health work can succeed.

There is nothing novel in all this and few will be found to dissent from the above. Rather, I fear, the criticism will be that I am threshing over old straw, and that the filth theory is buried as well as dead. I wish this were so, but I fear it is not, and I am sure that in my own city the outgrown traditions of the middle of the last century are still virile enough to decidedly interfere with real sanitary progress. Some of the most recent works on sanitation still reiterate the time-worn phrase about dirt and disease. The daily press and even the medical press speaks as if street cleaning, scavenging, modern plumbing and tenement house reform were the mainstay in fighting infection and reducing the death rate. The majority of even intelligent people today believe that Havana was made healthy by municipal engineering, while it was really accomplished by scientific effort specifically directed against certain infections. Our medical schools are also doubtless at fault, for many of even our younger physicians look for the source of malaria, typhoid and diphtheria in "unsanitary conditions," by which they usually mean defective plumbing, decaying vegetation, heaps of stable manure, or general yard rubbish. The great problem of sanitation today is how to deal with mild or unrecognized cases of contagious disease and with those persons who, though well, are yet infected. This problem is not likely to be solved so long as physicians trace infection to the class of *things* mentioned, instead of to *persons*. There is also no question that we health officials, even against our better judgment, cling to discredited methods. An entirely disproportionate amount of time and money is

devoted to plumbing regulations and the abatement of minor nuisances which have no direct relation to public health. We have far more sanitary inspectors than medical inspectors, and bacteriologists are not much in evidence except in the largest cities. Popular misconception as to the relation of dirt and disease is illustrated by the advertising cartoons of "Spotless Town," which is supposed to be so clean that the poor old doctor is dying of starvation. But we can rest assured that however spick and span may be the streets, and however the policeman's badge may be polished, that so long as there is found the bore so careless with his expectoration, and the doctor who cannot tell a case of sapollo from one of diphtheria, the latter disease as well as tuberculosis will continue to claim their victims.

Let me not be misunderstood. I am no lover of filth. I believe that personal cleanliness is the most important factor in the prevention of the infectious diseases. I as heartily believe in municipal cleanliness. It is one of the better phases of our modern urban life. The municipality ought to do much more than it ever has done to protect its citizens against nuisances of all kinds. Again, there is no question that municipal cleanliness does some good in the way of directly preventing disease, and also much in an indirect manner, by encouraging personal cleanliness. But there are many other factors in modern life which tend to promote health far more than the one in question. But the health department, when it interferes with property rights as it does, and expends so much time and money in nuisance abatement, should have some stronger warrant than that it tends indirectly to promote good health.

I would plead with health officers for a more rational perspective in directing their efforts and to devote more attention to the isolation of infectious diseases, medical inspection, disinfection, vaccination and the control of milk supplies, and less to the abatement of nuisances; and in the latter more attention to those nuisances which clearly and directly menace health, and less attention, or none at all, to those which do not. Do not claim more for municipal house cleaning than the facts warrant. Teach, on all occasions, the true relation of dirt to disease. And lastly, pay a little less attention to finical defects in plumbing, to stable manure and garbage buckets, and more to the solution of those problems of infection which are so urgently pressing upon us. To attempt to solve these problems is not so easy as abating nuisances, but it will pay better in the end, and every health officer should do his part in the advancement of sanitary science.

X

FACTS VS. FALLACIES OF SANITARY SCIENCE*

BY JOHN L. LEAL, M. D., PATTERSON, N. J.

If asked what one thing has accomplished the greatest results in the material betterment of mankind during the last half century, the sociologist would probably answer, "Public sanitation," and such answer would challenge successful denial.

To the student of the subject, looking over what has been accomplished under the head of sanitary science, public sanitation, or hygiene (indifferently called), such results cannot fail to be both impressive and surprising.

They are impressive because his eyes show him greater engineering works constructed under these names, better houses, streets and surrounding conditions. He finds that people eat better food and drink purer water; he learns that preventable diseases are prevented, or at least their spread limited, that epidemics have become much less frequent and virulent; while statistics teach him that the expectation of life has increased by years, and infant mortality decreased by a percentage astonishing. They are surprising, not alone for their vastness and importance, but still more that such good could come out of ignorance and error.

For such student is conscious that the most, if not quite all, of these good things are the results, not of the proper application of the principles of a science, but are the results of the carrying out of a theoretical empiricism based upon wrong premises.

Certainly no such successful outcome of error is known in the whole history of science.

To within but a comparatively few years the class of diseases called preventable, contagious or infectious, the prevention and limitation of which is the chief aim of public sanitation, was attributed by so-called sanitary science to, first, filth (composed of decomposing or decaying organic matter in more or less solid form and certain wastes); second, water (including that used for potable and domestic purposes containing decomposing or decaying organic matter, stagnant water, swamp or

* From The Christian Advocate, New York, August 21, 1902. By the kindness of the publishers.

marsh water, ground water, etc.); third, air (including the gases of decomposition and other extraneous gases, odors, excess of animal matter, carbonic acid and moisture or dampness, ground air, miasm, etc.); fourth, the earth (meaning certain vague telluric conditions).

When we discovered the true causes of these diseases, and that filth, bad water and air, and telluric conditions could not directly cause them, as it was hard to break away abruptly from the ideas and mental attitude induced by long belief and training, we conjured up certain vague, indefinite bodily conditions, which we attributed to the same as causes, and held that such conditions, through weakening the natural resisting powers of the body to disease, tended to make infection more probable in the event of exposure.

This position was based upon the principle that whatever weakens or lowers the tone of the bodily organism also diminishes the power of resistance to disease, with which power such bodily organism is endowed by nature. There is no reason to believe today that our last attitude had any firmer foundation than the first. Practical experience, as well as theory based upon our present knowledge, teaches us that exposure to filth, filthy water and filthy air does not in itself necessarily lower the tone of such bodily organism. And even if it did our present knowledge gives to vital resistance a firmer foundation than the general tone of the organism.

The causes, then, of the class of diseases which it has been the aim of sanitary science to limit and prevent being known,—what, then, are those causes, and what are the relations borne to them by filth, water, air and telluric conditions?

Preventable diseases, we know today, are caused by minute microscopic organisms belonging to either the vegetable or animal kingdom, and which bear a specific relation to the diseases caused by them. These organisms or disease germs form but a small proportion of the myriads of organisms otherwise similar to them, which perform most important functions, and without which, indeed, the world could not support vegetable and animal life.

To these beneficent organisms are due the processes of decomposition, putrefaction, fermentation, etc., and the results of their activities are the splitting into simpler compounds—carbonic acid, water and ammonia—of dead organic matter. It is through the carbonic acid, water and ammonia thus produced that the higher vegetation obtains the carbon and nitrogen necessary for its growth, and without which such growth would cease. As animal life is dependent upon vegetable life, its development would also cease. So we thus find in these little bodies, so minute as to be seen only by the aid of the most powerful microscope, not only our worst enemies, but also our best friends.

On the other hand, our enemies, the disease germs, instead of being engaged in building up and supporting life, devote their energies to its destruction or loss. They are true parasites, living at the expense of their living host by taking from it what is necessary to its own growth and development, and harming and destroying it through the products of their existence.

All of these various organisms or germs descend from like parents; and their existence, of necessity, presupposes a line of ancestors stretching back until lost in the shadow of the same mystery which overhangs the origin of man.

Each preventable disease is caused by one of these separate and distinct families of germs and can arise in no other way.

In order that a germ should cause a disease three conditions are necessary: First, that the germ should obtain access to the organism; second, that the germ should be in an active or virulent condition—for, owing to attention, unfavorable environments, etc., such germs may exist in the organism in a dormant or harmless state; third, that such activity or virulence should be sufficient to break down the power of resistance to such attacks, with which power every bodily organism is endowed by nature.

Such, then, being the known causes of these diseases, let us consider the relations borne to them and their causes by, first,

FILTH

The conception of what constitutes filth is largely a relative one, training and the personal equation entering largely into the individual definition.

What appears to be filth to the uninstructed may appear in an entirely different light to one who knows its constitution, origin and purpose; while, on the other hand, that which may seem the most disgusting form of filth to the more intelligent and the better educated, to the ignorant (who are accustomed to it, who have toward it neither an inherited nor acquired repugnance) it may not seem to be filth at all.

From a *general* point of view anything dirty—any matter which fouls, soils, defiles or pollutes, waste matter, nastiness—is filth. From a *sanitary* point of view filth is decomposing or decaying vegetable or animal matter and other matter involved with it.

Yet as that animal or vegetable matter in its original condition would not be considered as filth, the condition in which it exists at the time must make it so.

But that condition is simply a step in the chemical processes by which nature changes the matter from its original forms to others, which may again be useful in the great scheme of life.

These latter forms which appear when nature has finished her work certainly cannot be classified as filth.

The theory that the preventable diseases originated in filth never seemed logical, even before we knew the true causes of them. Now, as has been stated, we know that, directly at least, it has no relations to those causes.

It has also been stated that there is no proof of the claim that in some vague, indefinite way the presence of filth lowers the tone of the bodily organism and thus diminishes the vital resistance.

Now, there is only one way left in which even any indirect relation between filth and these diseases can be established.

We know that the disease germs require for their development and life heat, moisture and organic matter. Now, these conditions are usu-

ally attained in the presence of accumulated filth. It is, then, as the pabulum, or food, of these germs that filth bears the most important relation to this class of disease.

But even this relation is not such a vital one as may appear at first sight. The little germ, so to speak, has its own notions as to what is clean and unclean, and thrives better upon organic matter which is clean, and pure than upon that which is unclean and impure.

Every accumulated mass of filth, of whatever bulk, is a teeming mass of bacterial or germ life. These bacteria are working under conditions favorable to them; they are performing the functions for which they were created in breaking up organic matter into simpler chemical compounds, which shall be again of use in nature's laboratory. Under these conditions, and among these busy toilers at their natural work, the disease germs are at a disadvantage. For they are naturally parasites and live upon and in connection with living, instead of dead, organic matter.

In the struggle for existence which ensues they go to the wall, and we find a good illustration of the doctrine of the "survival of the fittest." It follows, then, that if filth becomes infected with these disease germs it is a danger for a time, but nature has minimized such danger by providing—except under exceptional circumstances—for its destruction. Filth while infected is dangerous in various ways: By being washed over the surface or by percolation through the ground the germs may reach water used for drinking or other domestic purposes, and cause their respective diseases; or infection may result through handling, accidental or otherwise; they may be carried by soiled boots, clothing or animals; may be deposited on food or in drink by flies; may be conveyed by the bite of the mosquito; when dry may be distributed through the air in dust, etc.

WATER

Water has probably been more blamed as a cause of disease than has filth, and probably with more reason.

Until of recent years, however, wrong reasons for this blame have been given. It was believed that the organic impurities in polluted waters were in themselves the causes of these diseases, and even today the chemist gives his opinion as to the healthfulness of water based upon the amount of organic matter which has been and is in such water.

In the light of our present knowledge such an opinion, based upon that *alone*, with no knowledge of the source of such organic matter and of the sanitary environment of such water, is utterly worthless. It is now known that the class of diseases in which we are interested are not caused by water because it contains large amounts of organic matter, because it is dirty or polluted, but because there have been introduced into it in some way certain germs which are specific of certain diseases of this class. And without the presence of these specific germs in the water, no matter how dirty or foul it might be, it could not give origin to the corresponding specific diseases.

It is admitted that water may be so foul, that it may contain so much vegetable or animal matter, or both, in such condition, that the drinking

of it may cause certain disorders, for the most part reflex or functional in type, in the same manner that similar disorders may be caused by the eating of bad or improper animal or vegetable foods.

It is possible, too, for such results to be most serious, and even fatal, if in either case ptomaines (poisons generated by certain forms of decomposition of organic matter) should be developed.

It is also admitted that the continual use of filthy water for potable purposes may interfere with the general health in another way and lead to future organic disease.

Water is the great solvent within the body, and one of its most important functions is the carrying away of effete and waste material.

If before using it already holds in solution an excess of organic or inorganic matter this function is interfered with, and waste matters accumulate in the body which in time are likely to give rise to certain organic diseases and states of auto-intoxication. It can be said, however, that filthy water is so disagreeable to the eye, to the taste, to the smell, or to all of them, and the effects of its use are so immediately unpleasant, that such use is not likely to be continued, except in cases of absolute necessity; whereas the infected, and therefore far more dangerous, water may be most pleasing to the senses, and in no way give warning of the peril contained. Still under these conditions alone we do not find origianting cases of typhoid fever and cholera, which are the water-borne diseases of this class in which we are interested.

These diseases caused by water mean access to and presence in said water of the bacillus of Eberth and the cholera spirillum, and that these organisms have come down from other cases of the same disease.

Their presence in the water is accidental or incidental, and in no way dependent upon the condition of said water as to the amount of organic matter, dirt, pollution contained.

Indeed, the results of their presence in so-called pure water are much more immediate, fatal and lasting than in so-called filthy water. This fact may be explained in about the same manner as the behavior of the disease germs in relation to filth.

Stagnant water, swamp or marsh water, etc., is concerned in the development of two preventable diseases—malaria and yellow fever.

Malaria has always been attributed to such water, but for improper reasons. It is caused, as we now know, by a minute organism belonging to the animal kingdom, called the plasmodium malarie, and in no other way.

In order to develop the disease it is necessary for said organism to reach the blood of the subject; and we know of no way in which this is accomplished except through the bite of a certain variety of mosquito. This method of infection has been established by most interesting and convincing experiments.

Experimenters have lived for long periods of time in notoriously malarial regions, in which it was almost certain for visitors to contract the disease in its worst forms, with no infection resulting.

They lived the same kind of lives, inhabited the same kind of houses, ate the same kind of food and drank the same water as the natives.

The only precaution adopted was to protect themselves from the bites of the mosquitoes.

Experiment has been carried still further by transporting infected mosquitoes to regions where malaria has been unknown, and there allowing them to bite persons who have never suffered with the disease, with the result of the development of the disease in such persons, and the finding of the plasmodium in their blood.

The very recent developments with regard to the origin of yellow fever is very similar.

This disease was long attributed to emanations from stagnant water, TWENTY-four—Iowa—Health

swamps, to miasm, etc., but these recent investigations seem to prove that this disease also is only conveyed through the bite of another variety of mosquito. Now, these malaria and yellow fever bearing mosquitoes breed in pools or collections of stagnant water, and it is necessary to empty, to drain, to fill such places, in order to get rid of them.

As to high or low ground water, the only relations borne to diseases of this class is to typhoid fever and cholera, and only relation to them through the possible infection of drinking water.

Both unusually high or low ground water may convey to drinking water, especially that drawn from wells, the germs of these diseases which, at ordinary levels of the ground water, would not reach it.

AIR

Air is principally composed of oxygen, nitrogen and carbonic acid. Oxygen is the important constituent for the animal world, and must be present in certain proportion to support life. Carbonic acid is required for vegetable life, and is of no direct use to the animal. Nitrogen is mainly a diluent and modifies the action of oxygen, though certain plants by the aid of bacteria are able to take it directly from the air and store up for animal use.

Besides these main constituents air contains aqueous vapor, argon, ozone, ammonia, organic matter, salts, etc., besides at different times varying amounts of almost every known substance—gaseous, semi-gaseous, organic, inorganic, etc.

Formerly it was believed that the preventable diseases were caused by bad air—that is, air containing too little oxygen, too much carbonic acid, aqueous vapor and organic matter—by the various gases contaminating the air, especially those arising from decomposition processes of organic matter, by ground air, odors, miasm, etc. We know now that these diseases can be caused through the air only by their specific germs carried in such air. These germs are in the air in connection with other suspended matters, such as dust, sand, soot, pollen of various plants and particles of almost every conceivable thing.

With such sand, dust, etc., they may be blown into the mouth and infect through the digestive tract, may be breathed in and infect through the respiratory tract, may be deposited upon the food or in the drink and infect in that way, may be deposited upon articles or objects which may be handled or used in such ways as to cause infection.

Only in some such way, though, can the infection of these diseases be caused through the air.

Of course, too little oxygen may interfere with health, and even cause death; various gases, some arising from decomposition of organic matter, present in great excess, may have an actually poisonous effect upon the system to a greater or lesser degree; but it can be only very exceptionally when these conditions will be serious enough to be important.

Except under those conditions ordinarily efficient ventilation will prevent any ill effects of consequences.

The body has power to accommodate itself to varying amounts of aqueous vapor in the atmosphere, without any interference with its health.

The trace of organic matter practically always found in air, unless infected, is harmless.

Ground air, especially in populated districts, is what may be called "bad" air, and simply requires dilution to make it fit for use.

Bad odors, smells, etc., have no relations whatever with the preventable diseases, and can have but the most transient effects upon the general health. Odors may be unpleasant, and, indeed, may be bad enough to cause some slight and temporary physical disturbances, through reflex action of the nervous system, but they do not and cannot cause disease.

Belief otherwise has been one of the greatest as well as most expensive of our sanitary errors, for though some good has been accomplished indirectly through it, yet that same amount of good could have been accomplished at much less cost had we known the truth.

Hardly a city today but has in its sanitary code a law or ordinance regulating the trade of plumbing.

In this ordinance will be found the strictest provisions as to details of quality and strength of pipe, location, trapping and venting of pipes and fixtures, etc.; its object being, as has been stated, "to prevent illness and death entering a house through the sewer pipe."

Some cities even require a strict examination of all persons desiring to enter upon the trade of plumbing, on the ground that their functions have such vital relations to the public health that only those who have been specially trained and educated should be allowed to do such work. The existence of such laws is simply a survival of the old idea of the preventable diseases originating from filth, filthy water and filthy air. When sanitarians originated and put in force such legislation they meant well, and were only acting up to their lights of that time; but its existence today is entirely unjustifiable, and only inflicts upon the householder an unnecessary hardship and expense.

All such legislation is out of place in the ordinances of health departments. Sufficient provision should be made in the building laws to provide for the proper carrying off of the sewage from houses and for the prevention of the ingress of unpleasant odors from sewers; anything further is superfluous.

The truth is that life and health in our homes are in far more danger from illuminating gas and its piping than from sewer air and plumbing. as sanitarians were responsible, in the first place, in teaching the casual

relations between disease and these different forms of filth, it is incumbent upon them, now that they know better, to disassociate them in the public mind.

The task will not be an easy one, however, for it is an error which has taken deep root.

How far it may carry otherwise intelligent people may be seen by the following illustration:

SPECIMEN ILLUSTRATIVE FACTS

The writer has personal knowledge of a certain sewage disposal plant which has recently been a matter of controversy. Such plant was of the intermittent sand filtration type, was well located upon a suitable soil, and yielded an effluent made by nature's own process, clear, pure and sparkling, better chemically and bacteriologically than the waters into which it flowed.

As a potable water such effluent would have been acceptable upon any table had its source been unknown.

Yet, forsooth, because persons passing along a road, and possibly two or three neighbors, under certain conditions were able to smell certain odors, which they probably could have found quite as often in their own kitchens—that is, the odors of dishwater and boiling cabbage—therefore it must be a menace to the health of the neighborhood and was so presented to the intelligent grand jury of the county in which it is located.

A certain river which has been under much discussion for the last ten years was once as lovely as its name.

Its pure limpid waters, its sloping banks and beauties too many to mention, made it an invaluable possession for any section or community.

It should have been cherished and protected as its most valuable asset. Yet, on account of the growth of towns, the building of factories and the general practice of the accursed doctrine that rivers are natural sewers, and that man, therefore, has the right to cast his filth into them, that river is now an open sewer, its contents a mixture of sewage, manufacturing waste, and a goodly proportion of everything that is vile.

It is discolored and filthy, disgusting to the sight and foul to the smell—a public nuisance if there ever was one, and of far-reaching extent. During these years most laudable efforts have been made to abate this nuisance and to restore, in so far as possible, the river to its pristine condition. Enlisted in this cause have been some of the most intelligent, the most public-spirited, the best citizens of the valley. Governors have written messages, commissions have been appointed and reported, legislative and other hearings and meetings have been held, columns have filled the newspapers, and discussion has never ceased—all in the cause. The chief argument advanced, however, whether in writing or speech, why the river should be purified, has ever been its danger to the public health as a possible and even likely cause of an epidemic or pestilence.

Now, it would be most interesting to have some of these gentlemen explain just how that might come about. The modus operandi of the conversion of the threat the river has been so long holding over our heads into a real, actual epidemic or pestilence, would be of the most intense scientific interest. Its discoverer would leave a name which would live in history. The writer is, however, obliged to confess with regret inability to win such a prize.

It is true that the river is filthy, but filth does not cause pestilence. Its waters are foul, polluted and infected with typhoid fever at least, but the water-borne diseases—typhoid fever and cholera—could only become epidemic from such a cause through the use of said waters for potable purposes, and no one drinks them.

Even the malaria-bearing mosquito is too dainty a bird to breed in such waters, which accounts for the fact that less malaria exists now along said river than was the case thirty years ago, when no such condition of affairs existed. The odors arising from it are not those of "Araby, the Blest," but odors do not cause pestilence.

It is true, of course, that an individual or two by falling into the river and swallowing some of the water, or in some such way, might develop typhoid fever, but an isolated case or two does not constitute an epidemic. Disgusting appearance and smell may, in those unaccustomed, excite certain transitory reflex and psychological disturbances, but TWENTY-five—Iowa—Health

habit overcomes these. People live and enjoy the best of health in slaughter houses, rendering establishments, sewers, on sewage farms, etc.; then why not upon the banks of this river?

The writer himself is a living evidence of its possibility, having lived thereon during the last four summers, with no more serious result than a rather excessive expenditure for perfumery.

But perhaps the aforesaid gentlemen are apprehensive of a miracle, or the development of some brand new disease, of which none of us have ever heard before, or possibly they are disciples of that "science" which is founded upon the "principle" that "whatever is believed to be will be."

In all soberness, the condition of the river is such as to call for the application of the proper remedy, but let those engaged in such praiseworthy undertaking base their arguments upon logical grounds, and not appeal to the ignorant in the name of a mistaken and misunderstood science. Their cause can better be advanced by basing it upon grounds of public decency, public morality and public economy than upon what in this day and age can only make such cause ridiculous.

THE EARTH AND CERTAIN TELLURIC CONDITIONS

Upon this point there is hardly space or necessity for speaking, as practically all the theories based upon it were due to superstition or ignorance.

Now, if filth, filthy water, filthy air and telluric conditions have such slight relations to true sanitary science, and if the preventable diseases, the limitation of which is the chief aim of public sanitation, are due

entirely to certain specific organisms, the presence of which are necessary for their development, what then are the most important means by which it is possible to so limit such diseases?

Briefly these means are as follows (these diseases will be spoken of as a class, and the chief general means given first; special means pertaining to individual diseases later):

1. A health department, with the necessary powers granted it by law, properly organized and equipped, and with a personnel properly educated and trained in scientific sanitary work.

As sanitation is now a more exact science, and as its methods and means of use have become and are becoming more exact and scientific, it is but reasonable to require of those engaged in its work not only a thorough understanding of those means, but also a scientific application of those means and methods.

2. Notification. In order to put into effect the measures necessary the health authorities must be promptly notified of the existence of preventable disease.

3. Every case of preventable disease is a focus for the development and distribution of the specific germs of that disease.

As long as such distribution is allowed to continue such case is a danger to the public health by making it possible for the development of new cases through infection from it, which in turn become new foci of development and distribution.

In order to prevent this danger, therefore, it is necessary to isolate such case so that just as few persons as possible shall be exposed to infection from it. This is best done by removal to a properly constructed and conducted isolation hospital. If this is impossible, then the best attempt possible must be made to isolate in the patient's own home. But true sanitary science, however, can allow no excuse for the lack of such an essential as the hospital.

4. Disinfection. When the patient is removed and isolated properly practically all direct danger to the public health from such patient ceases. An indirect danger, however, remains in the infected premises from which the patient has been removed.

Disinfection, then, is the process of destroying such infection by the destruction of the disease germs there existing.

This is accomplished by the proper use of certain chemical substances—gaseous and otherwise—by properly trained officers, by heat and by sunlight, nature's own disinfectant. Any intelligent person can understand how important a link in the chain of prevention this process must be, and how vitally important its proper administration. Too often, however, it is intrusted to one whose training possibly has made capable of distinguishing a pile of filth or an unpleasant odor, but who has no true conception of the cause of the disease, how it is possible to destroy it, and the means to be employed. In such hands it is more a ceremony of incantation than a scientific process.

5. Observation. After disinfecting the next step is to keep under trained observation those persons who have been exposed to infection,

either through patient or premises. The object of this is to isolate any such person who shall show symptoms of the development of such infection promptly, and with the minimum of exposure to others.

SPECIAL MEANS PERTAINING TO INDIVIDUAL DISEASES

1. Smallpox In this disease we have a special means of protection and prevention, which is practically perfect—vaccination.

No person efficiently protected by vaccination will contract smallpox, and even if such protection be not efficient enough to prevent the disease entirely, it will at least modify it to a greater or less extent, according to the degree of efficiency existing.

All that is necessary, then, to extirpate this disease from the world is the efficient vaccination of its population.

As this has so far been found impracticable, then in every case of the disease at least, besides the general measures above alluded to, it is essential to protect by vaccination all those exposed or likely to become so.

2. Typhoid fever and cholera The chief danger of infection in these diseases is from the discharges of the bowels, and of the kidneys in typhoid fever.

The germs of these diseases must be swallowed in order to produce the diseases. If these discharges are not properly cared for the germs may obtain access to the drinking water through sewage or drainage, or by domestic use of such water, or by carriage by flies, or by deposition when dried, in connection with dust, may infect other drink or food.

The two important measures, then, in the protection of the public health with reference to these diseases are the proper disinfection of the discharges of all patients suffering from them and the safeguarding of the water supply. Probably at least ninety-five per cent of all cases of these diseases come directly or indirectly from infected water used for drinking or domestic purposes. It thus appears how vitally important it is that water so used should not be infected.

The source of supply should either be such as cannot be so infected or if already infected or likely to become so its waters should be subjected to some process of purification which would remove or destroy the germs of these diseases, if present.

3. Tuberculosis The danger of infection in this disease is contained chiefly in the sputum of those afflicted. If this is distributed around promiscuously it becomes dry, and the germs which cause the disease, and which, unlike many others, are not destroyed by desiccation, become associated with the dust and other suspended matters in the air, and are breathed in through the respiratory tract, or taken in through the digestive tract, or deposited in food or drink, or deposited upon articles which are handled, etc.

The only special measure of protection necessary in this disease is the proper disinfection or destruction of the sputum; the only general measure the prevention of dust.

4. Malaria and yellow fever The only source of infection in these diseases known to us being the mosquito, all our preventive measures should be directed against him. The most effective are the destruction of the mosquito, the removal of his breeding places by drainage or filling, and the prevention of his infection by making his access to patients suffering with these diseases impossible.

SUMMARY

1. Sanitary science is based upon, and its results are due to, attempts to suppress or to limit the spread of preventable disease.

2. It was formerly generally believed, and is still believed by many, that these diseases were directly or indirectly caused by filth, filthy water, filthy air and certain telluric conditions.

3. It is known today that they are caused by certain minute organisms belonging to either the vegetable or animal kingdoms, and in no other way.

4. The relations between these disease organisms and filth, filthy water and filthy air are no closer than to organic matter, which is not and cannot be regarded as filth, and to what is considered to be pure water and pure air. Between them and the vague telluric conditions alluded to we know of no relations whatever.

5. Warfare waged against filth, filthy water and filthy air is not sufficient to protect the public health from preventable diseases, and is only incidentally of any benefit.

6. The suppression and limitation of spread of these diseases require the scientific application of certain definite procedures to each case and its cause.

In conclusion, it is the hope of the writer that nothing said above may seem in any way to disparage warfare against filth or to minimize its importance. Cleanliness, public and private, is demanded for moral, mental and physical reasons, which are strong enough in themselves not to require any false aid. Its cause cannot be injured by the truth being known and falsehood dispelled.

On the other hand, the truth will greatly benefit and strengthen sanitary science. Its cause has always been weakened in the minds of the more intelligent and has failed to secure all the support it should have, because its theories so disagreed with the teachings of experience.

Now, with knowledge of the facts pertaining to each, let both causes advance, each striving in its own sphere for the betterment of mankind.

XI

PUBLIC WATER AND ICE SUPPLIES AND DISPOSAL OF SEWAGE*

BY DR. L. H. PAMMEL, IOWA STATE COLLEGE

Mr. President and Gentlemen of the Iowa Engineering Society:—When Prof. Marston asked me to prepare a paper for your society I consented to do so because it is a pleasure to address a body who next to the physicians and veterinarians are more deeply interested in problems of sanitary science than men of any other profession or business. You are called upon to deal with those municipal problems that are of vital importance to every community. Many of our State Boards of Health have on more than one occasion called attention to the bad water supplied to many of our cities and villages. Attention has been called, and by our own board of health, to the almost entire lack of sewage disposal in the hundreds of small towns in our own State.

Let us review briefly some of the leading facts on the subject of bacteriology and its relation to our subject. Thirty-five years ago there was a wide-spread belief that fermentation was a purely chemical process, that organic substances undergoing decay could cause the decomposition of other organic matter. It was on this theory that Liebig explained the fermentation of sugar into alcohol; it was not the living yeast cells that produced or set in motion the process of fermentation; it was the dead yeast undergoing decomposition. It was due largely to the brilliant researches of Pasteur that this theory was exploded and fermentation shown to be due to living organisms. The modern chemical conception of fermentation has resolved itself into some of the most complicated of chemical problems. Researches along the lines of chemico-bacteriology have shown that as a matter of fact the various organisms produce complicated chemical substances classified as enzymes, ptomaines and tox-albumins, while the living animal cells produce leucomaines. Not only are these products given off, but they are contained in the living cell.

*This paper was presented in part at the annual meeting of the Iowa Engineering Society at their meeting in Ames, January, 1906.

The subject of bacteriology has become so important in modern medicine that no physician can claim recognition as an authority on zymotic diseases unless he treats it from the standpoint of the modern advancement in this, one of the newest of the sciences; nor can the sanitarian or engineer claim to be an authority on questions of this kind unless he considers the facts of bacteriology with reference to the profession of sanitary engineering. The author who ignores the facts of bacteriology can no longer find place as an authority in the library of a physician or an engineer. Facts are being established so rapidly, however, that even the best of works soon become obsolete. The whole subject of chemico-bacteriology in recent years has put an entirely new aspect on questions relating to disease. Facts that were supposed to be established ten years ago are interpreted very differently today. Says Prof. Conn, in his book on "Agricultural Bacteriology:" "The great host of chemical changes which occur in organic material under the action of bacteria must be left for the future to describe and explain." The chemical changes may be grouped under two heads: I. Synthetical process Anabolism. These consist in the building of complex bodies out of simpler ones. II. Analytical processes, Katabolism—reducing to simpler compounds the organic matter. The substances produced by decomposition are indefinite in number. The ptomaines are in the nature of excretions. Vaughn and Novy, in their excellent treatise, "Ptomaines and Leucomaines," have discussed quite fully the newest chemical phases of this subject.

But let us go back a moment to the relations of bacteria to disease. Dr. Baumgarten, the famous German pathologist, says: "In a study of diseases the aetiology must not be considered by itself, when in this case we are dealing with organic beings—bacteria and animal life, which bear certain relations to each other. The success in treatment cannot be controlled by a single factor."

Patrick Goddes, in that most charming of books, "Chapters in Modern Botany, says:

"Most important, however, is the fact expressed in the germ theory that bacteria are constantly and intimately associated with some of the most fatal of human diseases, such as consumption, diphtheria, smallpox, or typhoid, malaria or leprosy. Bacteria, in fact, will kill most of us."

DeBary says:

"It is not necessary to enlarge upon the manifold interest attached to these organisms at a time when the statement urged daily on the educated public does not fall short of saying that a large part of all health and disease in the world is dependent on bacteria."

WHOLESOME AND PURE WATER

Says John C. Thresh, in the preface to "Water and Water Supplies:"

"It is now fully recognized that an abundant supply of pure water is an absolute necessity for the preservation of health, and that one of

*Lehrbuch der Pathologischen Mykologie Vorlesungen für Aerzte und Studierende, pp. 973, with 108 fig. Harald Brauhm. Braunschweig 1890, see p. VII.

the chief duties of all sanitary authorities is to see that all the inhabitants of their districts have, within a reasonable distance, an available supply of wholesome water wherever such can be obtained at a reasonable cost."

So long as the old ways of looking at the nature of contagious diseases was in vogue little could be expected, since it was before the invention of the cotton air filter by Schroeder and Von Dusch (1854) methods of sterilization, used by Schwann and others of his time and perfected by Pasteur, Koch and modern investigators, the use of aniline dyes to stain bacteria, the introduction of culture media by Cohn, Pasteur, Brefeld, Schroeter and the plate method of separating germs first used by Koch; these landmarks have, in a large measure, helped to give us a clear understanding and knowledge of the contagious nature of diseases.

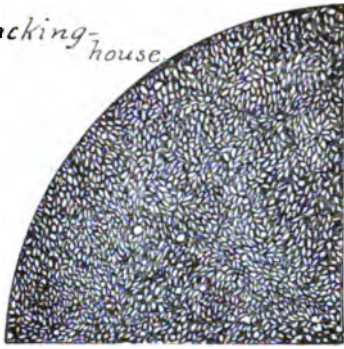
ANTHRAX AND OTHER GERMS CARRIED BY WATER

We have seen that several authors believed that diseases like anthrax and cholera were supposed to be carried by specific organisms. In some cases, as in anthrax, Davaine had observed in 1850 that the blood of anthrax animals contained stiff rods of the anthrax bacillus. Pollender observed the same rods in 1849. In 1863 and 1864 Davaine presented to the French Academy the results of his inoculation experiments with the blood of diseased animals. It was also shown as early as 1865 that sputum taken from tubercular patients would produce tuberculosis. As yet, however, the evidence was not conclusive. In 1877 Koch published the results of his work on this disease, in which he showed conclusively that this special bacillus, which he had isolated from diseased animals and cultivated outside of the animal body, produced typical anthrax; that in the animal only the vegetative condition occurred, but when the animal dies these rods produce spores; that infection in cattle and sheep commonly results from the taking up of spores while grazing in an infected pasture. The organism thus leads a dual life, one in the animal and one in the soil.

In pure cultures spores are readily formed and these retain their vitality for a long time. The writer has found that these, when kept in silk threads, retain their vitality for at least six years. We mention this disease in particular, as it shows what rules must be followed in bacteriological research. The classic canons of Koch must ever be observed, and these are, first, the constant presence of the germ with the disease; second, isolation and cultivation of the germ; third, successful inoculation with the germ isolated and followed by the same disease; fourth, this germ must be the same as in the original diseased animals.

We shall in a moment discuss the chief organisms that occur in water, and the diseases they produce. Water may be responsible for carrying more diseases than typhoid fever, Asiatic cholera, hog cholera and others of that class. Incidentally it may convey other diseases. Glanders, a well known disease in horses, and also occurring in man, is known to have been conveyed through a trough, very much in the same way

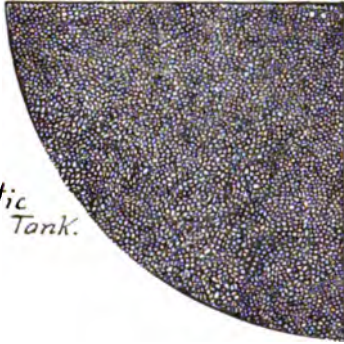
Packing-house



Ketchum St. Crossing



Septic Tank.

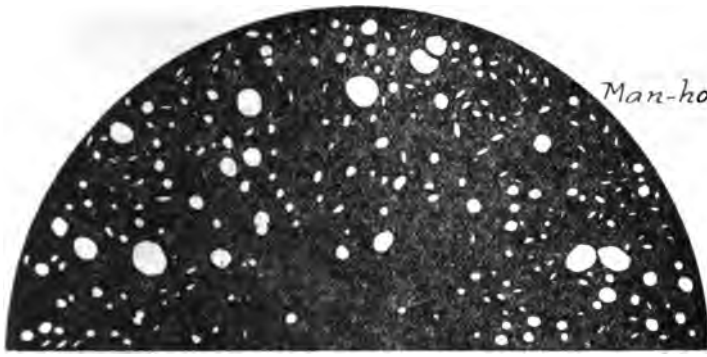


Glucose Factory.

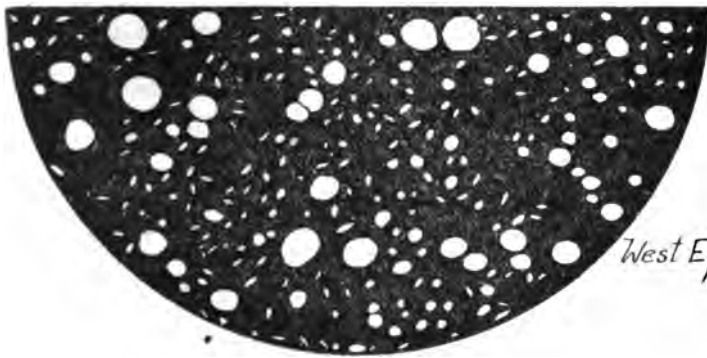


Outlet of Sewer.

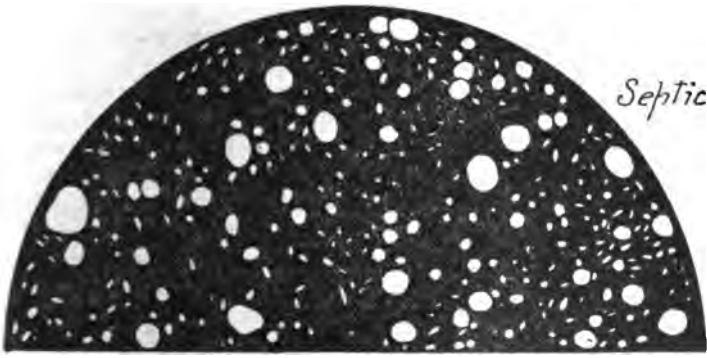
Bacteria from Marshalltown sewage.



Man-hole



West Effluent



Septic Tank



East Effluent

as diphtheria has been spread by the use of drinking vessels containing the organism. Tuberculosis and other diseases of that character are distributed in the same way. It has also been suggested that Actinomycosis, or lumpy jaw, may be communicated in the same manner by means of pools of water. It is a well known fact that the intestinal disease, hog cholera, is caused by drinking contaminated water. It is stated by some authorities that the organism of hog cholera may live in water, and even multiply. Hence it is that polluted streams have conveyed the disease to farms along the water courses. Even should the germs themselves not be conveyed there can be no doubt that the products of bacteria conveyed in water may be injurious to animals and even man. I shall treat of this subject a little later.

During the past season the following interesting fact bearing on this question came to my notice. An epidemic of anthrax occurred in the vicinity of LaCrosse, Wisconsin, which threatened the cattle of an entire valley, wherever they came in proximity to the water from a polluted stream. Dr. Russell, of the University of Wisconsin, who investigated the outbreak in question, found that some four years ago an animal died rather mysteriously, and from the evidence at hand he concluded that it had died of anthrax. A veterinarian was not called to diagnose the case. The animal was buried several feet under ground in close proximity to a small run. The heavy rains of the last season washed the earth from the remains, and the spores formed in the carcass of the animal floated off, down the stream and infected the entire valley, causing a very serious outbreak among the cattle and endangering the lives of the inhabitants of the valley.

Mr. Thresh, in "Water Supplies," makes the following statement:

"In America, where a considerable amount of attention has been paid to the dissemination of diseases amongst cattle by impure drinking water, many outbreaks of anthrax, hog cholera, glanders and other diseases have been recorded which competent observers attributed to this cause. On one station the carcass of an animal which had died of anthrax was cast into a tank or pond from which about one thousand head of cattle were supplied with water. Within a very short time ten per cent of these died of anthrax. Some years ago, when wool sorters disease appeared amongst the operatives at a woollen factory in Yorkshire, a number of cattle grazing in a meadow through which flowed a stream receiving the waste water from the mill were also attacked. In 1893 many cattle on a farm in South Russia died of anthrax, and the bacilli were found in the water used, coming from a well. Professor P. Frankland has shown that under certain conditions the anthrax bacillus forms spores in water, and that these spores retain their vitality for a considerable period, under such conditions."

Asiatic cholera is a disease which for centuries has carried away thousands of human lives every year, and is certainly worthy of the deepest and most profound studies of physicians and bacteriologists. That the disease is contagious in its nature has long been recognized.

The distinguished investigator, von Pettenkofer, long worked in vain for the specific cause. His work on the spread and distribution of the disease is a most important contribution to the literature on the subject, especially his researches on the relation of ground water and the "drying zone" to cholera epidemics. The splendid achievements of Robert Koch, who was sent by the German government to study cholera in Egypt and India have made his name famous. On this mission he demonstrated a specific micro-organism which he called the comma bacillus, but which belongs to the spiral forms and is known as the *Spirillum cholera-asiaticae*. This germ was found in the dejecta of patients suffering from this disease, in cess pools and water which received the dejecta, in milk etc. It was not as easy to convince scientists and physicians that the germ found by Koch was the cause of Asiatic cholera, since Finkler and Pryor found a germ in cholera nostras which appeared to be identical, and Deneke found apparently the same germ in old cheese.

Miller found a comma bacillus in the human mouth; moreover, Klein, an eminent English authority, claimed that Koch's material germ was entirely harmless. The evidence of a specific germ in this disease is conclusive. This has been shown in the laboratory and by the accidental inoculation of a young physician in Koch's laboratory in Berlin with this germ, who became sick and had the symptoms of genuine cholera. The experiments of Ferran, Koch, Gamalea and others with Guinea pigs leave no doubt as to the casual connection of the organism and Asiatic cholera. It is generally recognized now as the cause of the disease. There are many apparent anomalies, as shown in the distribution of cholera, and Pettenkofer's theory of "ground water," which are fully set forth in Dr. Shakespeare's splendid monograph on cholera. If the contagious nature of the disease and the biological questions are taken into account, these conditions can be accounted for. The history and spread of this disease all show how important it is to take heed of sanitary conditions. It shows that the disease spreads most rapidly where effluvia and excreta contaminate the water; food, too, may be an important item in its spread. That old habit of using the sewage to sprinkle over vegetables in some countries, or the use of night soil for growing vegetables is an extremely dangerous thing.

HOW WATER SHOULD BE EXAMINED

There are two ways in which water may be examined: First, microscopically; second, cultures. The former was the method chiefly in vogue before the Koch system of cultivating germs was used. This method was employed by Cohn and Radelkofer in making examinations in Breslau and Munich. The bacterial examination of water requires cultures, and this is a very important part of the work. But I do not believe that cultural examination is sufficient for this work. The Massachusetts State Board of Health employed Dr. Sedgewick, a well known authority on biological research, to make a biological study of the sewage and drinking water of Massachusetts. A new method was introduced as the

combined work of Kean, Sedgewick and Rafter, which makes it a comparatively easy matter to determine approximately the microscopic organism.

A study of the microscopical organisms of water dates back to the beginning of the study of bacteria by Leeuwenhoek, who in 1675 was a devoted student of the micr-organisms in water, although George Chandler Whipple, in his "Microscopy of Drinking Water," states that Hook in 1665 was pioneer in the study of these microscopic organisms. He was followed by such investigators as Ray, 1725, Hudson, 1762, Muel-



Bacteria found in one-tenth cubic centimeter of well water.

ler, 1773, Dillwin, 1809, Kuetzling, 1834, Ehrenberg, 1836, DuJardin, 1841, and Stein, 1849. Hulwa in 1879 emphasized the importance of making a microscopical examination of water. Nor can I omit in this connection the important researches of Dr. W. G. Farlow* on Boston water supply, and those of Dr. Wm. Trelease on the organisms found in the lakes at Madison, Wisconsin, and the work by Arthur† on the organisms found in the water of this State and Minnesota. but for a more extended account of the literature I must refer to the book by Whipple.‡

* Bull. Bussey Inst. 1877, on Some Impurities of Drinking Water Caused by Vegetable Growths. Suppl. Ann. Rep. Mass. St. Bd. Health, 1880.

† A supposed poisonous seaweed in the lakes of Minn. Acad. Science, 2:383.

‡ Microscopy of Drinking Water, 300 21 19 pl. 1899.

A complete sanitary examination of the water in a laboratory consists of a biological, physical and chemical. In the biological examination we determine under the head of microscopical, the number of organisms per c. c., and also the amount of inorganic amorphous matter, under the head of bacteria the number to the c. c., noting especially the presence of intestinal or pathogenic bacteria. In a microscopic study of water we are dealing with both plants and animals but I am not concerned in this paper with the subject of animals. The different plants found may be grouped as follows: Diatoms, Green Algae, Blue Green Algae and Fungi. In regard to the plants it may be of interest here to state that there is a seasonable distribution. Mr. Whipple, who has given the subject a great deal of attention, states in reference to the seasonal variation in the species of these organisms in lakes.

"If the lake is a typical one the water during the winter will contain comparatively few organisms; in the spring various diatoms will appear; these will disappear in a few weeks and in their place will come the green algae; at the same time the blue green algae may be found; in the fall both of these will vanish and the diatoms will develop again; as the lake freezes these in turn will disappear." Those who are interested in this subject will find the facts brought together in excellent shape by this author.

ORGANISMS OF WATER

The subject of bacteriological analysis of water has been investigated by a large number of different persons. It is worthy, however, of all the consideration that has been given it. The subject is discussed very fully in an admirable work by the Franklands, "Micro-organisms in Water," and a large number of text-books dealing with the subject of bacteriology give more or less prominence to this question. A knowledge of the bacteria present in water is therefore of prime importance. While it is true that the common putrefactive species may in themselves be dangerous only as they give off the products of decomposition, yet there are certain species, while commonly not disease producers in man, like *B. Coli communis*, are nevertheless pathogenic under some conditions. Moreover, they are found in human and lower animal dejecta. The presence of such a species is a sign of sewage contamination. It is a well known fact that there are several common species in the soil that are closely allied to the *B. coli communis*, the bacillus common in the intestinal tract of man, so that the subject of bacteriological analysis of water is confronted with great difficulties.

BACTERIA OF THE SOIL

And right here, before I take up the question of organism in the water, it is proper to refer to those that are common in the soil. Miquel, the celebrated French investigator, states that there exists in a gram of ordinary soil at Mantsouris 750,000 bacteria, in the Rue de Rennes 1,300,000, and in the Rue de

Monge 2,100,000. These soil bacteria are of the greatest importance in the economy of nature. It has been well said that while bacteria cause much misery in the world they are our great benefactors. Without them there would hardly be any rot or decay. Our beautiful landscapes could not exist. The earth garnished with the bloom of flowers, the green herbage, its magnificent forests, our cereals and food plants would not have the material from which to build up their fabric, except for these tiny plants. The nitrogen so essential for all living plants is only made ready for the use of plants by these wonderful micro-organisms.

NITRIFICATION

In the disposition of sewage the question of nitrification is a most important one. Suffice it to say in this connection that there are two distinctive processes concerned in nitrification. On the one hand the complex nitrogenous substances are converted into ammonia, and on the other the ammonia is converted into nitric acid. Each of these processes is brought about by the action of specific micro-organisms. In addition to the process of nitrification we know from experimental research that denitrification may also occur. That is, the nitrates may be reduced to nitrites. We have found in our laboratory that a half dozen common putrefactive species are capable of reducing nitric acid. The whole subject is so important that it can only be discussed by going into the subject exhaustively. We must therefore be content with the skeleton outline of the subject given here. For a more extended account we must refer you to the admirable researches of Warrington and to the copious literature on the subject that has been issued during the last few years in bacteriological journals. To return again to the subject of water, a few facts may be given, more especially such facts as pertain to our own water.

NUMBER OF BACTERIA IN WATER

We would have you observe at the outset that there is a wide difference in the bacterial contents of waters. Dr. Gruber sets the maximum number of bacteria to be found in spring water from forty to fifty, in well water from 300 to 500 per c. c. Fraenkel states that good drinking water should not have more than fifty germs per c. c. Many bacteriologists place the limit at 1,000 germs per c. c. It is stated that the water taken from the Croton reservoir, New York, contained from 5,000 to 15,000 germs per c. c. Water taken from the Munich supply contained from 305 to 12,606 germs per c. c. Fraenkel estimated the number of germs in the water supply of Berlin at 6,140, while below the city there was a great increase, the number being 243,000 per c. c. The Kiel water supply, according to Breuning, has from 62 to 1,712 germs per c. c., the number of liquefying species varying from 4 to 188. Wells in the same city had more than 26,000. The following instructive table,

given by Rosenberg, shows the condition of the water above and below the city of Wurzburg:

Above	Below
520.....	15,500
720.....	18,000
680.....	22,000

Percy Frankland has given the germ content of the rivers Ure and Ouse as follows:

Upper portion of the Ure.....	1,800
Sixteen miles above York.....	33,400
Opposite York.....	31,200

The Massachusetts State Board of Health gives the following facts in regard to the change in the bacterial content of the water at various points between the cities of Lowell and Lawrence, on the Merrimack river. The number varied from 24,300 to 1,600 in one test, and in another from 42,000 to 1,300. In a run of nine miles above the pumping station of Lawrence the bacterial content decreased from 39,200 to 1,400.

RIVER WATERS

Dr. J. H. Long reports the number of bacteria in the waters of the Illinois river at different points, and as affected by the drainage canal. These results were obtained in the latter part of August, 1899:

Joliet Canal.....	199,200
Morris	55,800
LaSalle	1,400
Ottawa	3,200
Henry	2,700
Peoria	3,960
Lower Peoria.....	43,200
Pekin.....	52,500
Havana	1,800
Grafton, Illinois River.....	6,500
Grafton, Mississippi River.....	10,450

You will notice here the continued decrease from the Joliet canal to LaSalle, the increase at Peoria and decrease to the Mississippi river.

In our own State there has not been a great deal of this kind of work done. Following are some of the results. First, an examination of the water of the Mississippi river near La Crosse, Wisconsin, showed the presence of about 3,000 bacteria per c. c., May 10, 1893. D. W. Day investigated the bacterial content of the waters of Squaw Creek during the floods of the past summer. The estimates were made during the first two weeks in July, 1902. The number varied at different stages of the flood from 600 to

nearly 30,000, during the first week, and from 40,000 to 5,000 during the second week.

F. W. Faurot in 1901 recorded the number of bacteria present in the waters of Squaw Creek and Skunk River as follows:

Skunk River		Squaw Creek	
April 30.....	1,800	May 19.....	300
May 7.....	1,800	July 2.....	11,200
May 9.....	916	Aug. 8.....	16,200
May 19.....	1,800	Aug. 8.....	8,520
July 6.....	27,000	Oct. 4.....	2,400

Our own tests of the water of the Iowa River at Marshalltown, Iowa, just above the first sewer outlet, shows the bacteriological content of the water to be 93,960 per c. c., and just above the main sewage outlet 666,000. Evidently the water is highly charged with bacteria.

BACTERIA OF WELL WATERS

There is a very wide difference in the number of bacteria in different well waters. Pure spring water should contain relatively few bacteria, since the chances for contamination are so small. Libbertz found no germs in the water from springs of Frankfort-on-Main, while in other cases from the same spring he obtained from fifty to sixty bacteria per c. c. Furbinger found from thirty-two to 156 in a c. c. from Jena, and in Zurich Cramer found from nine to 3,425. In the Uintah mountains of Utah a number of springs were tested by a member of our botanical party. In one case there were no bacteria present, in the other only fifty per c. c. Our own college spring has been investigated at different times. In 1892 Messrs. McCall and Patton found from fifty-six to 320 germs per c. c. Tests in 1891 showed from fifty to 300. Dr. W. T. Sedgwick investigated the bacterial contents of a number of springs in Southern New Hampshire. The results were very constant, running from seventy-two to 218.

Naturally we find great variation in the bacterial content of wells. It will not be necessary in this connection to refer to studies of European wells, but it may be of interest to quote a few figures from the data furnished by Dr. Sedgwick and Mr. Prescott. Various wells yielded results varying from 140 to 602. They also record results from a number of deep tubular wells. The number was very small, varying from fifty in one case up to about 300, average number about 250. The water from the deep well here at the college has a bacterial content that varies from about fifty to 250, though a few times a little higher.

The average of six samples is about 276.

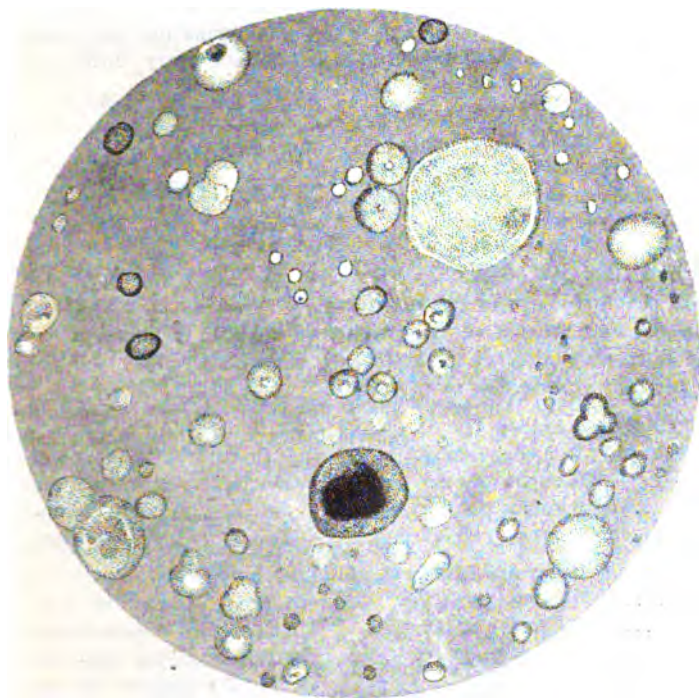
A number of analyses of the bacterial content of the various wells near the college have been made. Some of the results are as follows. They were made in 1901. Averages are given of several tests:

Pritchard well	35
Illsley well	1,642
Munn well (Tile)	300
Pammel (Brick)	500
Budd (Deep)	40

Owing to the large amount of surface water present in the wells this last season, many of the wells were again investigated, and almost invariably the number of bacteria was very much larger. Following are the results:

Paxton well	12,000
Jas. Robb well	2,400
Pammel well	9,200

One of the most important of pending questions in the state today is the supply of good water and the proper disposal of sewage for the farmer and for the small villages. For the small towns some such disposal system as is in operation here at the college, or the one planned by Professor



Marston for the town of Grinnell. We urge upon every community the necessity of taking steps to inaugurate a sewage disposal system and a common deep well supply of water.

During the spring two suspicious cases of typhoid fever were found in one of the college club houses and I was requested by Dr. Harriman, the college physician, to make a bacteriological examination, to detect if possible the presence of intestinal bacteria. Under my direction Miss Elva Barton, doing special work in bacteriology, made an examination of the well with the following results:—

LABORATORY RESULTS

The water collected for analysis was taken directly from the well, in most instances, into sterile test tubes. Two sets of plates were poured from water taken from tap in like manner. Three samples were used each time.

No. 1 directly from well. No. 2 after pumping ten minutes. No. 3 after pumping twenty minutes. Agar plates were poured February 2.

	First count Feb. 4.	Second count Feb. 9	Third count Feb. 14.
No. 1....	75 germs per cc.	6,950 germs per cc.	11,700 germs per cc.
No. 2 ...	750 germs per cc.	8,750 germs per cc.	9,300 germs per cc.
No. 3....	1,000 germs per cc.	2,750 germs per cc.	5,700 germs per cc.

Fermentation tubes containing 5 per cent solution of glucose bullion were inoculated with 1 c. c. and when gas formation was complete it was measured by method given in Moore's Laboratory Guide—with following results:

No. 1 produced 4.3 cc gas.

No. 2 Produced 9.5 cc gas.

No. 3 produced 3.3 cc gas.

The percentage of CO₂ determined was:

No. 1 28.6 per cent.

No. 2 23.3 per cent.

No. 3 43.8 per cent.

The remainder of the gas was H.

As percentages varied so greatly no definite conclusions could be drawn as to possibility of presence of B. Coll Communis, the proportion given for that germ being 40 per cent.

Plates poured March 4.

Counted after three days.

No. 1 3,600 germs per cc.

No. 2 1,460 germs per cc.

No. 3 1,170 germs per cc.

Counted after seven days.

No. 1..... 10,500 germs per cc.

No. 2..... 4,500 germs per cc.

No. 3..... 2,700 germs per cc.

Plates poured March 17 (after four days.)

No. 1 5,550 germs per cc.

No. 2 1,050 germs per cc.

No. 3 750 germs per cc.

Plates poured March 27.

Counted third day.

No. 1 750 germs per cc.

No. 2 430 germs per cc.

No. 3 320 germs per cc.

Counted eighth day.

No. 1 2,400 germs per cc.

No. 2 1,700 germs per cc.

No. 3 920 germs per cc.

April 2. Samples were collected as usual, but stood in a warm place for 48 hours before plates were poured. The colonies were too numerous to estimate—showing very rapid increase, especially of nonchromogenic species.

Plates poured April 8th. These samples were taken from the tap instead of directly from pump—and poured immediately.

	First count April 12.	Second count April 15.	Third count April 20
No. 1	1,540 germs per cc	5,300 germs per cc	19,300 germs per cc
No. 2	1,480 germs per cc	3,100 germs per cc	15,400 germs per cc
No. 3	1,100 germs per cc	2,700 germs per cc	

Large whitish colonies developed the second day—by fifth day they were quite numerous.

Plate No. 2 (containing one-tenth cc of the water), 208 chromogenic colonies of one species.

Fifty-nine non-chromogenic remainder very small chromogenes of probably not more than four species.

Plate No. 1 (.1 cc water used) 270 non-chromogenic colonies remainder chromogenes of few varieties—small orange-colored colonies predominating.

Plates poured May 5th. Samples taken directly from pump. Count after 12 days.

No. 1 18,700 germs per cc.

No. 2 15,900 germs per cc.

No. 3 9,500 germs per cc.

Plate No. 1 contained 140 non-chromogenic bacteria; No. 2, 210 non-chromogenes; No. 3, 110 non-chromogenes.

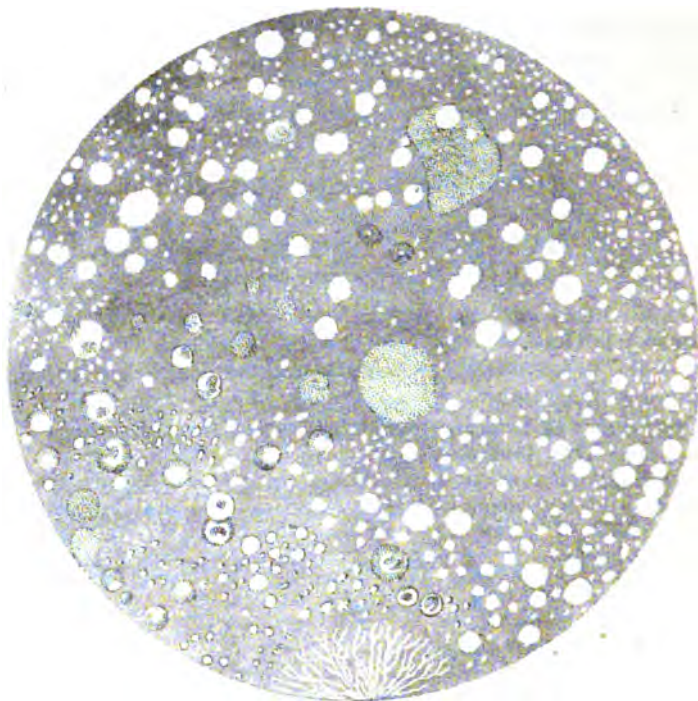
Small colonies the prevailing type.

These colonies in depth are spherical or oblong—on the surface they are flattened—some quite large— $\frac{1}{8}$ inch in diameter, the older growths showing white fringed edges.

Morphologically—a bacillus from 1.5 to 1.8 μ long—and two or three times as thick, occurs singly or in twos and are not motile.

Stab culture on agar develops large, irregular surface growth, old cultures shading in deep reddish orange. Looks like a mixed culture, but is found to be quite a constant characteristic. Growth along needle track not marked. On gelatine the growth is not so profuse, but pigment extends along the needle track. Does not liquify. Corresponds very closely to *Bacillus aurantiacus*, except that motility was not observed. May be identical with the Orange-red water Bacillus. *Bacillus liquefaciens*—*fluorescens* and *Sarcina lutea* were quite positively determined, also pink yeast, *Saccharmyces glutinosa*.

While some germs found have many characteristics of *B. Coli communis* and *B. Cloacea* neither were positively identified. In conclusion, while the number of germs found to be present in the water would argue great impurity, the species identified are those common to water, and not pathogenic. Quantitatively the number of germs per c. c. exceeds greatly the number given by any bacteriologists that may be present in



drinking water. Quantitatively the gas producing germ indicates possibility of presence of harmful organisms—though many bacteria of soil produce gas.

BACTERIA IN FILTERED AND UNFILTERED WATER

Mr. DeLa Sheldon, another special student in bacteriology, has made an investigation of the number of bacteria found in filtered and unfiltered water. This is a question of direct value to the creamerymen in the state. The results of his work are here appended.

"As a matter of interest the writer determined the efficiency of a water-filter designed by the dairy department and placed in their plant for trial. At first this filter proved unsatisfactory, but after allowing the water to run for one week it worked admirably. Out of the last ten plates which have been set the resulting number of bacteria found per c. c. ranges from one to twenty.

"A curious fact about the filter is that the water must run constantly if efficient work is done. If the flow of water be allowed to cease for a time the bacterial content of the water (when the flow is started) is greater than the original content of the water.

"However, it is apparent that from 300 to 400 bacteria per c. c. can be removed by this process,—and in some cases the entire bacterial content of the water was removed. Since this can and has been done it is probable such filters can be used to advantage in filtering water taken from lakes and springs for the public supply.

"In conclusion, would say that the results of these investigations make manifest the need of great care being exercised in so far as the public water supply is concerned. Further, the bacteriologist and sanitarian should proceed to inaugurate movements which will speedily result in the proper precautionary measures being taken to guard safely the public health."

THE BACTERIA OF ICE

Several complaints were made the present spring with reference to the bacterial contents of ice. We therefore undertook, with the co-operation of the senior students in bacteriology, an investigation of the various forms of bacteria found in ice taken from some inland waters of the state.

Quite a number of investigations have been carried on in this country, as well as in Europe. The most elaborate of the early investigations were those carried on by Frankel. Frankel examined the ice supplied by one of the ice companies of Berlin and derived from one of the lakes situated above Berlin, this lake forming an expansion of the river Spree. Examinations were made from February, 1886, until the middle of April. The bacteria found present varied from twenty-one to as many as 8,800. Later Heyroth made an extensive investigation of ice supplied to various places in Berlin. His table is quite instructive.

Zeit. f. Hygiene. 1: 802.

Franklands Micro-organisms of Water. 8^c.

Bacteria Contents of Ice (Heyroth)

Day of Investigation	Origin of Ice	Number of Bacteria in 1 c. c.
19. 9.85	Plotzen Lake	490
5.10.85	Plotzen Lake	4,900
12.10.85	Plotzen Lake	121
19. 9.85	Rummelsburger Lake and waters near Kopernick.....	425
5.10.85	Rummelsburger Lake and waters near Kopernick.....	210
12.10.85	Rummelsburger Lake and waters near Kopernick.....	1,150
12.10.85	Kaiser-bassin at the Navigation Canal. Spandan.....	634
12.10.85	Pond at Reinickendorf.....	2
15. 5.86	Plotzen Lake	1,835
17. 5.86	River Spree at Treptow	171
17. 5.86	River Spree at Treptow.....	30
17. 5.86	River Spree at Treptow	1,780
18. 5.86	Peaty pond-water from Lichtenberg Meadow.....	800
26. 5.86	Peaty pond-water from Lichtenberg Meadow.....	800
15. 6.86	Flaken Lake at Erkner.....	448
15. 6.86	Peaty pond-water at Rummelsburg.....	392
15. 6.86	Pond-water at Temperhof.....	1,510
15. 6.86	Peat-meadows at Rixdorf.....	2,040
15. 6.86	Lichtenberg Meadow and Lichtenberg Lake.....	2,750
29. 6.86	Lake Reinickendorf	47
29. 6.86	Weissen Lake	735
29. 6.86	Rummelsburg Lake and waters near Kopernick.....	765
29. 6.86	Pond-water (situation not specified).....	14,400

The Tourin ice, according to Bordonì Uffreduzzi, varied considerably, the river water contained innumerable micro-organisms, while the ice derived from the same water contained on an average 580 germs per c. c., and the ice generally contains 90 per cent less organisms than the river water.

Dr. Sedgwick, who has given considerable attention to the subject of the bacteria of ice and the micro-organisms found in ice, says as follows:

"From these various considerations we may conclude that the answer to the question, 'Does water purify itself in freezing?' depends largely upon the conditions under which it is frozen. If ice is formed upon a quiet lake or pond of considerable depth the water of the pond probably does purify itself to a marked degree in freezing. But if, on the other hand, the freezing takes place in such a way that sedimentation has little influence, or if an entire mass of water is frozen solid, purification may be much less marked or even largely wanting.

"In spite of the fact that ice may contain very considerable numbers of bacteria, and that it has hitherto been regarded as a dangerous vehicle of disease, only a surprisingly small number of epidemics have been

Die biologische Untersuchung des Eises. Centralblatt für Bakteriologie. 2. 499.
Principles of Sanitary Science and Public Health. 233-5.
See Annual Report Massachusetts State Board of Health. 1900. 32: 510 and 21: 145.

charged to infected ice; and a careful examination of the reports of these leaves upon the student the impression that the dangers of polluted ice have probably been exaggerated.

"The first epidemic attributed to infected ice, and carefully investigated, occurred at a summer resort known as Rye Beach, New Hampshire, in 1875. The illness in question—a severe intestinal disorder—was confined to the guests of one of the large hotels. The milk supply, the water supply and the drainage appeared to be above suspicion; but the ice supply had been derived from a small pond, the waters of which were rendered foul by a mass of putrescent matter composed of a mixture of marsh mud and decomposing sawdust. Chemical analysis of the water from the pond and of the ice showed the presence of high total organic matter and high ammonias, both free and albuminoid. The inference was that the disease had somehow come from the ice. In 1878 Dr. Charles Smart, surgeon United States Army, attributed certain cases of 'malarial remittent' fever in a Rocky Mountain army post to the contamination of mountain streams by melting snow."

Dr. Prudden, the eminent New York bacteriologist, has likewise investigated the subject of ice and infection from typhoid fever. The ice supply of New York City in 1888 was largely derived from the Hudson river, a stream highly polluted by sewage from Albany, Troy and other places. "Yet a study of the vital statistics of New York City," says Sedgwick, "does not support the idea that much typhoid fever is conveyed by ice, because, while ice is almost universally used in that city, its death rate for typhoid fever has always been, and is now, exceptionally low for an American city."

Yet it cannot be denied that there are well known cases of the carrying of typhoid fever by the ice supply and the almost universal custom in America of using ice should call for the best possible supply. It should be clean and should always be from a running stream. Many of our smaller streams are in imminent danger of obtaining an ice supply, while it may directly convey typhoid fever, does contain a large amount of material brought down from the small runs that are likely to contain products that are inimical to public health.

A CONTAMINATED ICE SUPPLY

The following work carried on in the laboratory by Miss King and Miss Brown shows the conditions occurring for an ice supply found in the vicinity of Ames.

The recent epidemics of typhoid fever in Chicago and elsewhere have given rise to some very interesting discussions concerning the relation of the drinking water and the ice supply to the outbreaks. All authorities seem united in holding that the great majority of typhoid epidemics—and many other diseases, especially of the intestinal tract—are directly traceable to an infected water supply. Of 650 separate outbreaks of typhoid, concerning the etiology of which Schuder has recently collected information, 462 were outbreaks caused by water. And it is probable

that if accurate information could be collected of the persons infected with typhoid by polluted water, in different epidemics, that the percentage would be considerably higher. Sedgwick, in his "Principles of Sanitary Science and the Public Health," cites several instances of typhoid traced to an infected water supply, in which localities in the same neighborhood, with the same conditions of atmosphere, the same drainage (and presumably), with the same sources of food supply, but with an independent water supply, were entirely free from the disease.

Edwin Oakes Jordan, in his paper on "Typhoid Fever and Water Supply in Chicago," says "The marked and constant excess of typhoid fever in Chicago has been generally attributed to the pollution of the city water supply. Since a very early period in the history of the city the extraordinary practice has prevailed of allowing a portion of the sewage to flow into Lake Michigan, which has been at once the recipient of the city refuse and the source of the city water supply. A large number of the city sewers have for some time emptied into the small stream known as the Chicago river, which on this account has achieved a widespread and unenviable notoriety." He continues: "It is probably true that typhoid fever is sometimes spread by means of infected dust. It is unquestionably correct to recognize the danger of spread by secondary infection, by the agency of flies and by infected raw food stuffs, but these factors, important though they are, play a subordinate role as compared to water infection."

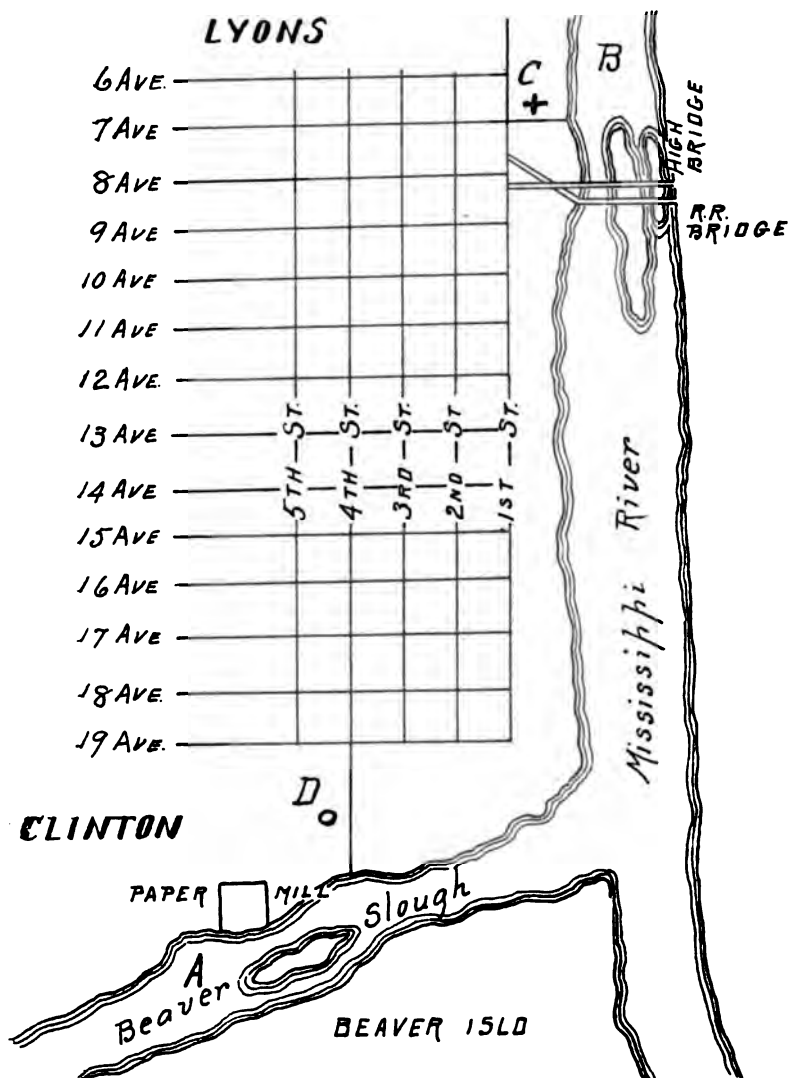
The importance of a pure public water supply is clearly shown, and there is probably no more important question before the sanitarian of today than that connected with this phase of community life. Costly and destructive epidemics can only be avoided by having a pure water supply and by constant care to see that it remains so. Water and ice—which is only a branch of the water supply, especially when used in water and food—should conform to certain chemical and bacteriological tests, if the public health is to be maintained. And the presence of dangerous pathogenic organisms should not be necessary to condemn the supply; but if mild pathogenic organisms (as *B. coli communis*) are present it should be regarded as unsafe. The reason for this is apparent when the difficulties of isolating and identifying certain bacteria—notably the typhoid bacillus—is known, and when the fact that these virulent organisms usually occur in connection with the mild pathogenic bacteria is given due consideration.

The above is generally acknowledged in the case of water supply, and considerable care is exercised to see that the supply is kept pure; but very little is taken to ascertain whether or not the ice sold is fit for consumption. And this becomes a subject of considerable importance in this country, especially, during the summer months. The use of ice in drinks and in food is characteristic of the nation and the ice supply is likely to become a serious problem. Care is taken to see that the water supply is pure; but ice is gathered from any and all sources—from sewage polluted ponds and streams, from waters into which drains the surface water from towns and cities, from every infected source. And this

is put into our water to cool it and used in various ways in food. Or, if the ice be manufactured, no care is taken to see that the water is pure. Indeed, the river or pond ice is preferable to the manufactured article, unless the water from which the latter is made is of known purity; for freezing tends to kill all organisms, especially if long continued, and the pond or river ice is necessarily stored for a number of months before using. It is probable that the long freezing kills large numbers of bacteria, or at least diminishes their strength and power of reproduction; and that ice which has been stored for some time is purer from a bacteriological standpoint than the water from which it was taken. But the fact still remains that large numbers of bacteria are able to stand long continued freezing and that some of these are pathogenic in their nature. *B. Coli communis* has been repeatedly identified in ice that had been frozen for months. Hence such ice should be regarded with great suspicion and not allowed to be sold for use in food.

Under the direction of Dr. L. H. Pammel, the writers conducted an investigation of the ice in use at the college creamery. This ice was taken from a body of water known as Briley's Pond. This pond is situated so that it receives with every rain the washing from several barns and club-houses situated near. It is, moreover, reported that a sewer empties into it, but as to the truth of this last the writer cannot say. However, the situation of the pond, where it constantly receives the drainage from barns and dwellings, is sufficient cause for grave doubts as to the healthfulness of the ice taken from it; and the results of the investigation show that such doubts are not without foundation.

Samples of the ice were obtained from the creamery ice-house and also from Mr. Briley's ice-house in six different weeks, that different layers of the ice might be tested. These samples were broken open and ice taken from the interior with sterilized instruments. The ice was carefully melted in sterilized tubes and one-tenth c. c. was poured over the surface of an agar plate just before it solidified. A fermentation tube of bouillon was also inoculated with the same quantity. Practically all of the fermentation tubes developed gas, which was shown in one sample to be *B. coli communis* by isolation and culture. The first week the plates were very warm when inoculated, and but comparatively few bacteria developed; but after that the results were fairly constant. On April 17th part of the sample had the appearance of snow ice, and extra plates were poured of that. The results fully demonstrated the supposition that snow ice was not as pure as other. The results are given in the accompanying table.



CREAMERY ICE HOUSE

Date obtained	No. bacteria per c. c.	No. species	No. molds per c. c.
Feb. 28	50	3	0
April 4	150	3	0
April 4	100	1	30
April 10	8400	4	0
April 10	12000	4	0
April 17	10000	4	0
April 17	16100	3	0
April 17	50000	4	0
April 24	17400	5	0
April 24	14000	5	0
May 1	13000	3	10
May 1	14100	4	10

BRILEY'S ICE HOUSE

Date obtained	No. bacteria per c. c.	No. species	No. molds per c. c.
March 28	30	1	10
April 4	440	5	10
April 4-30	430	5	20
April 10	10500	3	0
April 10	14000	3	0
April 17	18200	3	0
April 17	10000	3	0
April 17	42700		
April 24	18400	4	0
April 24	21700	5	0
May 1	11400	5	90
May 1	9000	3	0

The following organisms were isolated and identified:

Micrococcus candidans.

Micrococcus aurantiacus.

Micrococcus cereus flavus.

Micrococcus flavus liquefians.

Micrococcus cereus albus.

Bacillus coli communis (occurs in large quantities).

Sarcina lutea (also occurs in numbers of instances).

Micrococcus violaceus.

Cladothrix.

Of these, *B. coli communis*, *Sarcina lutea* and *M. cereus flavus* appear to be most abundant; and it appears extremely probable that *B. coli communis* is present in sufficient quantities to render the use of the ice in food unsafe. *Coli communis* has also been identified by another investigator of the same ice, and found to be present in considerable quantities.

Altogether, the situation of the pond, the number of bacteria present, and their character, renders the propriety of using the ice for anything but storage purposes extremely doubtful.

The Foster ice examined was obtained from Read and Read, and comes from the pond which is north and east of Ames and east of the Skunk river. This water comes not only from springs but rises in small valleys adjacent to the hills. The source of the water is in part from springs that occur in the low grounds along the small brooks. The water flows through the level flood plain of the Skunk river for a little over a quarter of a mile, emptying into a depression of the flood plain, thus forming a small lake. Owing to the high water of 1902, the water was running out of this pond, emptying into Skunk river. The border of this lake is surrounded by semi-aquatic plants, chief among which may be noted calamus (*Acorus Calamus*).

This analysis shows the importance of collecting ice only in such places where there is a possible chance for it to have an overflow.

CLINTON ICE SUPPLY

Mr. J. O. Shaff in the writer's laboratory made an examination of the ice obtained from Clinton and Lyons. The Clinton sewage empties into the Mississippi river at the foot of Seventh Ave., marked "C," and comes from the central part of the city. The sewer coming from the south side of the city empties into Beaver Slough at the foot of Fourth Street.

The Lyons sewage empties into the river at the foot of Main street and is the discharge from the main part of the town.

The ice in Lyons is generally cut about four blocks above the sewer. The ice of the first samples was obtained from the common city ice supply. This ice comes from a place where the sewer empties into the river, at the point marked "A." From the several plates poured there were 40,600 bacteria per cubic centimeter. Of the bacteria present some of it resemble *B. coli communis*. It seems, however, to correspond with the *Bacillus subtilis similis*. The second sample of ice from Clinton came from above the point where the sewage empties into the river at the point "B."

The bacteria present in this sample was 1,000 per cubic centimeter. The third sample was poured a week later; this was also obtained at the north end of the city, with results similar to the second sample. The average being nearly one thousand germs per cubic centimeter.

Beaver slough is a branch of the Mississippi, below Clinton, and has some running water. It is very likely to contain some of the sewage bacteria of Clinton.

XII

SOME SUGGESTIONS AS TO THE PROPER DISPOSAL OF THE DOMESTIC WASTES OF ISOLATED COUNTRY RESIDENCES

BY CHARLES FRANCIS, C. E., DAVENPORT, MEMBER IOWA STATE BOARD OF
HEALTH

The study of hygiene and the application of the hygienic arts so long neglected (in fact since the time of Moses), have recently come to be recognized as very important factors in the health, happiness and prosperity of the civilized portion of humanity.

Hygiene looks to the maintenance of good health, and the hygienic arts have their application in the preservation of health by the prevention of disease. Now we know that a large number of very grave diseases are caused by drinking water that is polluted by sewage. Typhoid fever, cholera, diphtheria, scarlet fever and all the enteric fevers are directly traceable to sewage-contaminated drinking water, and the most common and prolific cause of pollution is the careless, not to say criminal, way in which the sewage of most communities is disposed of.

It is not proposed to discuss in this paper the methods of sewage disposal in communities where there is a sewage system, but to suggest some simple and efficient plans and devices by which the domestic waste of country houses, which can have no connection with a general system of sewerage or drainage, may be safely and thoroughly disposed of.

It may be necessary to state here that by the word *sewerage* is meant the system of pipes by which the *sewage* of a house or community is carried away. *Sewage*, which includes everything that should go into the sewer—the kitchen waste, the laundry waste and the discharge from the water closets—is all carried away from the house by the sewer; and the serious problem that confronts us is what should be done with it. As stated before, drinking water which is contaminated by sewage is the direct and immediate cause of a large number of very serious diseases; that is to say the water has been poisoned, and this poisoned water taken into the stomach has caused sickness.

Let us then consider this sewage as a specific poison and handle it and treat it as such. This means that the sewer or drain pipe, which conveys this poison away from the house, must be laid with tight joints—that is, made as far as possible a continuous pipe, and the cess pool or tank into which the sewage is finally discharged must be water tight, doing away entirely with that abomination, the leaking cess pool. As Wm. Paul Gerhard so forcibly says in his "Disposal of Sewage of Isolated Country Houses," published by the Iowa State Board of Health, 1892:

"In the leaching cess pool we have the worst possible example of stagnation and of accumulation of putrefying filth on our premises. The great objection to a leaching cess pool is not only that it constitutes in itself an abominable nuisance comparable to a powder magazine which merely needs a simple spark to create destruction, but that it unavoidably and invariably pollutes the subsoil in the neighborhood of dwellings, contaminates the water supply and renders the air we breathe obnoxious by its exhalations. * * * It is indeed of the utmost importance that the local water supply of isolated dwellings be kept as clear and pure from contamination as possible; but even supposing that water is introduced from a street or public supply, the enormous evils of soil pollution and air contamination remain."

The case against the leaching cess pool is much strengthened if we accept our hypothesis that *sewage is a specific poison*.

Somebody has said that criticism is but half complete when an alternative or remedy is not suggested, in view of which a discussion of the value of the anaerobic or septic tank as an effective and safe method of sewage disposal is here presented.

The meaning of *safe* method is that the effluent or final discharge, after the sewage has been treated, shall be harmless.

The anaerobic tank is so called because the sewage in the tank is subjected to the action of anaerobic bacteria which break down all the solid matter in a most remarkable manner, thus putting the sewage into a much better condition for filtering. One of the most valuable functions of the tank is the hydrolysis and transformation into gases of cellulose in sewage, such as paper, rags, vegetable matter, etc. As an illustration of this, on October 4, 1900, a considerable quantity of newspaper and cotton and woolen cloth was placed in the experimental septic tank at Andover, Mass., in wire baskets. On December 31st the cloth and paper were still intact, but so rotten that they fell to pieces when touched. The same substances upon the surface of a filter where oxidation is the principal action would have probably remained without much change for a much longer period.

What has some to be the generally accepted article of faith in the great problem of sewage disposal is very clearly stated in the second annual report of the Com. sewage commission, 1901, as follows:

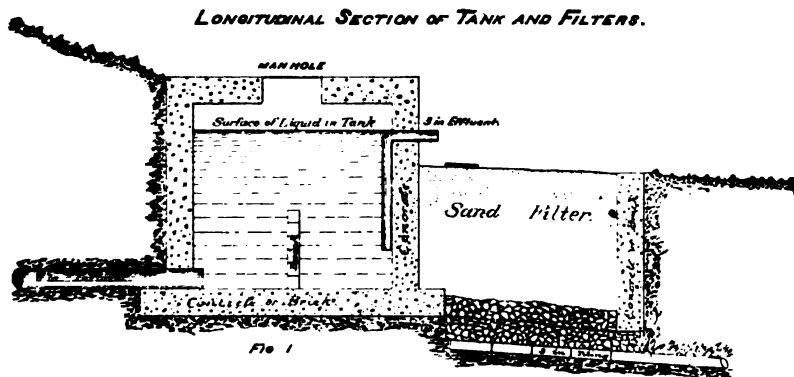
"The cleansing of sewage by bacterial action is the only method which seems at present to give promise of widely successful application; no other known method actually destroys the putrescible matter

in sewage, making the effluent clear, not poisonous to fish and incapable of putrefaction. No other known method can, therefore, perfectly satisfy reasonable requirements in those cases where the effluent must be discharged into streams or shallow harbors."

In fact, this treatment of sewage is neither more nor less than the attempt to imitate nature's own methods of effecting the decomposition and finally the purification of the effete matters of the animal and vegetable kingdoms. In the words of a celebrated sanitarian:

"Whenever and wherever there is a decomposition of organic matter, whether it be the case of an herb or an oak, of a worm or a whale, the work is done by infinitely small organisms. They are the important, if not the only agents of universal hygiene; they clear away more quickly than the dogs of Constantinople or the wild beasts of the desert the remains of all that has had life; they protect the living against the dead. They do more: if there are still living beings, if since the hundreds of centuries the world has been inhabited life continues, it is to them we owe it." Or, as Prof. Kinnicutt put it, "The bacterial treatment of sewage is the endeavor to obtain under control and supervision results which are everywhere being produced in nature by agents which have been at work ever since life first appeared in the world. It is an attempt to carry on under the best possible conditions these processes of nature by which the dead vegetable and animal matter is continually being changed into mineral substances. We know that it is neither plant life in the one case nor chemicals in the other that removes soluble putrefying substances, but that the purification is caused by those minute forms of vegetable life which we call bacteria."

The septic tank furnishes all the conditions which are favorable to the effective working of the anaerobic bacteria.



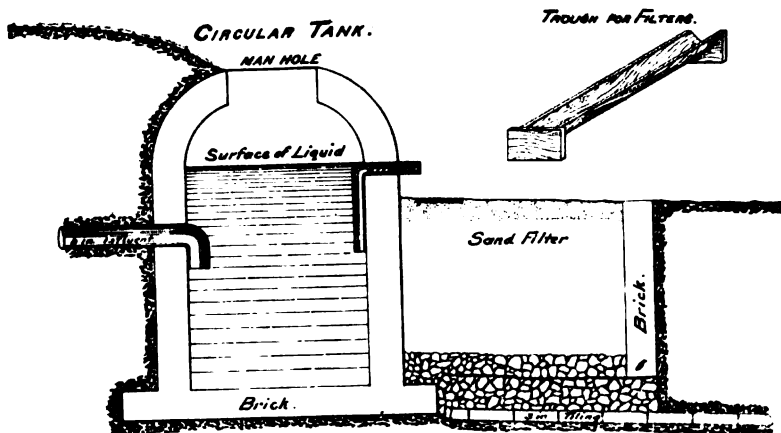


FIG. 2.

TRANSVERSE SECTION

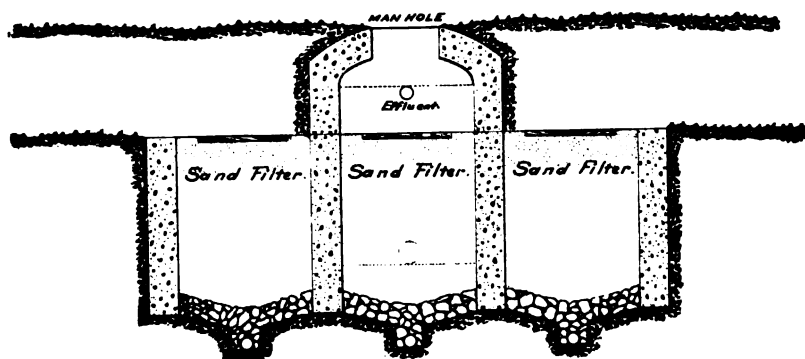


FIG. 3.

PLAN

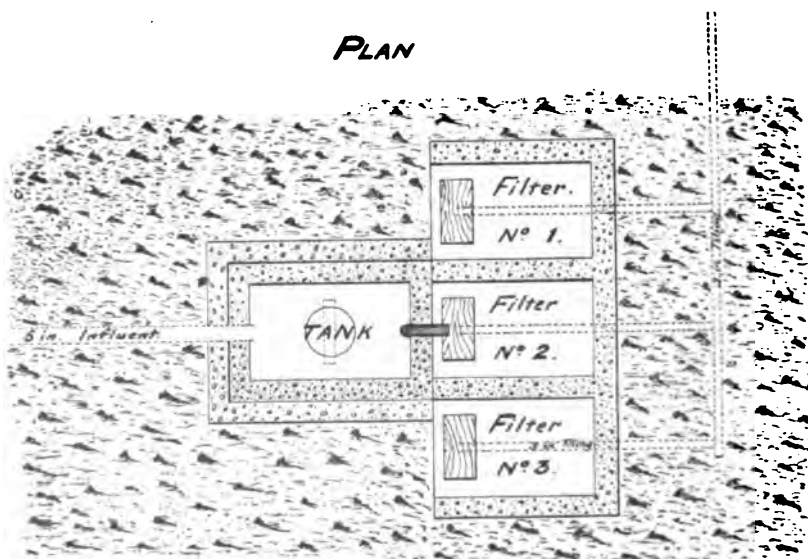


FIG. 4.

The tank should be built of brick or concrete and should be perfectly water tight. The influent and effluent should be below the surface of the liquid in the tank, and the construction should be such that the surface of the liquid would be maintained at a uniform level. An absolutely essential factor in this system of sewage disposal without which the purification is but partially completed is the intermittent filter.

These are shown in figures 1, 3 and 4. These filters supplement the work of the anaerobics and oxidize and purify the effluent of the tank to a remarkable degree. Filters are commonly known as strainers, and the generally accepted idea is that the action of a filter is simply mechanical. This primitive idea does not, however, apply to intermittent filters, which we are now considering. A field of sandy soil may be a very effective strainer, but if worked intermittently it is much more than this. A mere strainer soon chokes and must be cleaned, but an intermittent filter does not choke and is self-cleaning.

When the application of sewage to the several tanks outside the experimental station at Lawrence, Mass., was begun, even the most intelligent workman predicted that these would quickly choke and become a nuisance, but after two years of actual operation nothing more objectionable could be seen upon them than upon other fertile land; and analysis clearly disproved the mechanical theory by a comparison of the chemical character of the sewage as applied with that of the effluent from the filters.

There may be a period at the beginning of the work of an intermittent filter when there is but little if anything more than a mechanical cleansing, but under proper conditions there speedily begins a change of the profoundest significance. The dissolved organic matters no longer pass out as they come in. The suspended matters for the most part cease to accumulate, and both appear in the effluent under other forms. Obviously mechanical processes alone could not effect such changes as these. There can be no question that the action of an intermittent filter is primarily chemical, and the ability of such filter to effect chemical changes is abundantly proved. Another factor has come to be recognized. Dr. Frankland, in the River Pollution Reports, says: "From all of these experiments it appears that the action of the filter must not be considered as merely mechanical."

The process carried on in it is also chemical. A field of porous soil, irrigated intermittently virtually performs an act of respiration. It has been definitely established, moreover, that micro-organisms (bacteria) are an indispensable element in the constitution of a successful intermittent filter, so that the essential chemical theory has given place to one essentially vital or biological. An intermittent filter is no longer regarded as a mechanical strainer, nor is it a chemical furnace; it resembles a *living organism*.

In fact, the upper layers of the earth, especially in fertile regions, filled as they are by the myriads of bacteria, constitute a great intermittent filter. When the farmer dresses his field with manure consist-

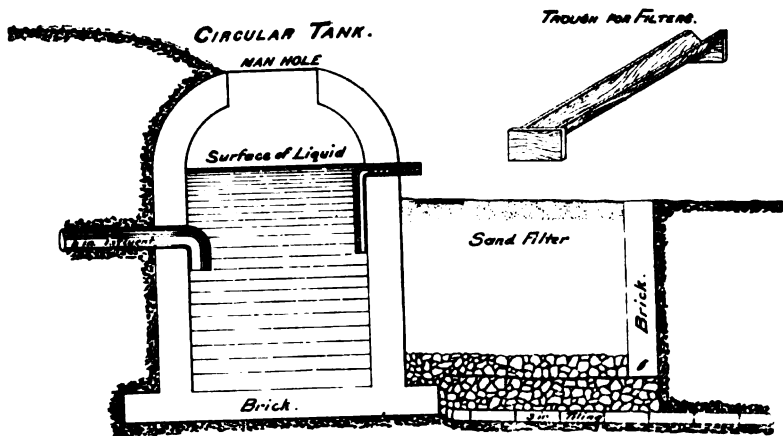


FIG. 2.

TRANSVERSE SECTION

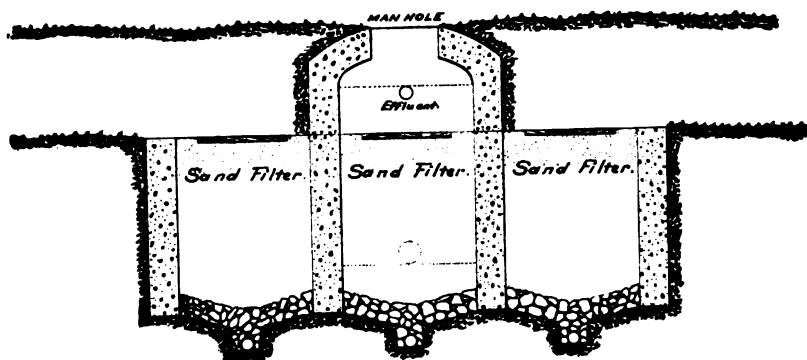


FIG. 3.

PLAN

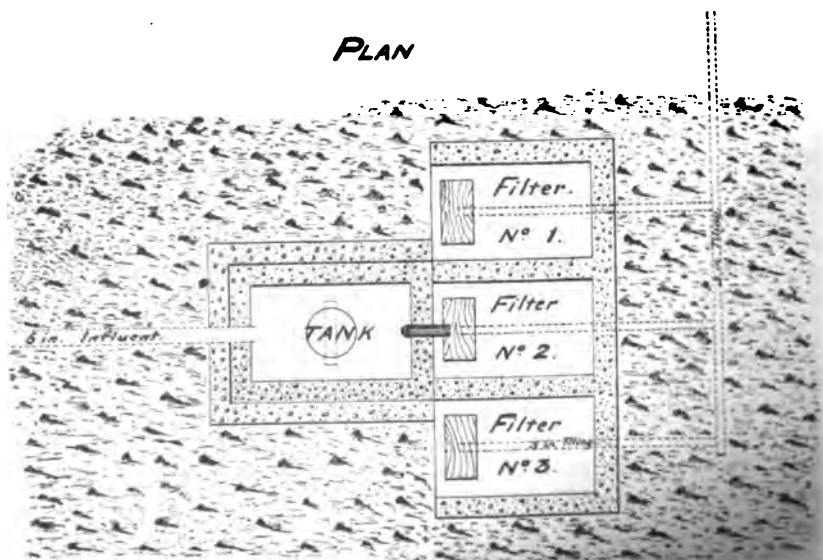


FIG. 4.

The most serious of these is the fact that the water in the surface of the water is absolutely essential for the filter.

These are the work of the to a remarkable the general chemical. This alters, which very effective than this. intermittent

When in experimental intelligent come a number objectionable and analysis of the chemical efficient from

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ing largely of the wastes of animal life we are not surprised to find that after a time these wastes have disappeared, while the soil upon which they were placed has grown soft and rich. The rain that falls upon the ground, in general more or less polluted, is attacked by these millions of bacteria, and is nitrified and oxidized and purified, giving forth as an effluent the pure spring water.

So that we have every reason to believe that this method of sewage disposal (intermittent filtration), which is in successful operation all over the world, is at the same time one of the primitive, one of the most practical and one of the most perfect systems hitherto employed by man.

The use of the septic tank is, as has been stated, to prepare the sewage for filtration, while the filter alone will do the work thoroughly and almost perfectly, yet a much larger filtration area is required than when the septic tank is used.

The organic matter found in sewage is partly in suspension and partly in solution, and sewage contains in itself the necessary living germs for the destruction of both these forms of organic matter. The aim and object of the biological treatment, which is accomplished in the septic tank, is to render soluble by microbic agencies the solid matters and to split up by the action of living bacteria both the matter thus dissolved and the organic compounds which were organically in solution, into their simpler elements.

In the final process of purification, which is done by the intermittent filter, these substances should undergo oxidation in connection with the oxygen of the air, and an effluent should be produced which is free from putrescible matter and contains only inorganic or mineral substances. Thus we see that the so-called biological treatment of sewage is nature's own method of purification of the mineral and vegetable wastes.

The preceding has been written to prove, it is hoped, clearly and conclusively, that the combination of the septic tank and intermittent filters forms a very complete and effective method of disposing of the sewage of an isolated country house. It has been assumed that the plumbing has been properly done in the house; that all the drain pipes from the various fixtures, bath tub and toilet bowls, sinks, etc., have been carefully trapped, and that all the plumbing is exposed, so as to be easily accessible at all times, and that the sewage is concentrated to the main sewer or drain leading from the house.

The object of this paper is to suggest what shall be done with the sewage after it leaves the house. It must be remembered that we are dealing with a specific poison, and all the work on the piping and connections must be made tight and secure so that none of this poison shall escape into the ground or house.

The site for the disposal plant should be selected with due regard to its bottom level in relation to the level of the cellar floor. Lay the main drain or connecting pipe between the house and the tank about four and one-half feet below the surface of the ground and make the gradient as nearly as possible straight. Fig. 2 is recommended as being

the best model of the tank: the circular tank built of brick laid in cement mortar absolutely water tight. The influent pipe, that is the main drain from the house, has a bend in the tank as shown on Fig. 2, placed so that the sewage shall enter the tank about half way between the surface of the liquid and the bottom of the tank. Set the effluent pipe also so that the liquid may be drawn from the center (vertically). Have a man hole so that the tank may be examined from time to time. The cover of the man hole should have a half-inch hole in the center of it for the escape of the gases that may be generated in the tank. As to the size of the tank, this will depend on the quantity of sewage discharged into it daily. For an ordinary country residence using, say 250 gallons of water a day—and turning it into sewage in the using—a tank four feet in diameter inside, and holding four-foot depth of liquid, would be about right. Such a tank would hold 377 gallons, and the daily discharge from the house—250 gallons—would remain in the tank about twenty-seven hours.

The sewage is now ready for the filters, which are to be made as shown in the figures. For a discharge of 250 gallons per day these filters should have an area of 25 square feet, say five by five, with five feet depth of sand. Two hundred and fifty gallons daily upon twenty-five square feet is equivalent to 435,600 gallons daily upon one acre, figures that are well suited to this kind of sewage. The filters should follow as closely as possible the sketches shown in their construction. Paved with stone, say six inches general diameter, furnished with three-inch drain tile as shown, and filled up with five feet of ordinary mortar, or building sand, nothing more is required of it than it be *clean*.

The effluent from the filters may be run off anywhere, as it will be clean, safe water that will do no harm to anything or anybody. A prosperous, progressive farmer would put in a man hole on the line of final discharge tiling, not far from the filters, so that he could occasionally get a sample of the effluent and send it to a chemist to be analyzed and thus keep himself informed as to the working of the disposal plant.

The intermittent filters, as their name implies, should be worked intermittently. Thus, this morning place the trough so as to lead the effluent on to filter No. 1; tomorrow morning, at the same hour, take the trough away and allow the effluent to flow on to filter No. 2. The next day, again at the same hour, lead the effluent to filter No. 3, and so continue, thus giving each filter one day's work and two days' rest. This intermittance is a most important factor in the working of the filters and must be very carefully attended to. As to the cost of this disposal plant, if built according to Fig. 2, the circular tank, to discharge 250 gallons a day, the cost would be approximately \$125.00. It would add very much to the value of the plant if it were covered in by a small house, which would increase the original first cost somewhat.

XIII

THE LABORATORY IN PUBLIC HEALTH WORK*

I wish, first of all, to express my appreciation of the honor done to Minnesota and to me by your invitation to present before this society some of the phases of laboratory work in relation to the public health.

There seems to be little need to argue the desirability of the establishment, equipment and proper maintenance of laboratories for the study of the cause and as an aid in the prevention of transmissible diseases of men and animals. Many of the state and provincial boards of health of the United States and Canada, as also in Mexico, have had laboratories in operation for a number of years. It is quite compatible with modesty to assert that America, the eminently practical, is not behind the older countries in the application of scientific methods to the location and elimination of dangers to the public health. Of necessity, owing to geographical, climatic, financial and other conditions, such as relative density of population and the laws under which the state boards of health are constituted, the state laboratory work undertaken throughout America varies within rather wide limits, and it would appear proper to consider shortly the scope of the laboratory work of a state board of health.

SCOPE OF STATE BOARD OF HEALTH LABORATORIES

The establishment, by many large cities, of laboratories in connection with their municipal boards of health has made a provision for a large amount of investigation, but there still remains a much larger field, which must fall primarily to the state boards of health at least for many years.

In some of the larger states, where the distances are great, the difficulties of operation are increased but are not insuperable. In general, the work of a state board of health laboratory may be subdivided into two classes.

First—Routine work whose aim should be to assist, when necessary, local health boards throughout the state in the exact determina-

*Read by Dr. F. F. Westbrook, Minneapolis, Minn., before the Iowa State Medical Society at its meeting held at Cedar Rapids, April 15-18, 1908.

tion of foci of known infectious diseases, and thus attempt to prevent the spread of such diseases. This should include not only the examination of materials from human beings, but suspected water, milk, food and even domestic and other animals where the infection may be spread from them to man. The testing on new methods of bacteriological diagnosis; of the values of various commercial antitoxins and disinfectants; together with the investigation of other problems for which methods have been formulated, should constitute a part of the routine work of such laboratories.

Second—Research work should be undertaken so that the etiology of obscure infectious diseases and their methods of transmission may be determined, new methods formulated and old ones adapted for the conditions which obtain in the particular locality; whilst in general all problems concerning which exact knowledge may benefit the state and protect its health should be studied.

It is impossible in all cases to draw any sharp line of demarcation between what constitutes routine work and what may be properly considered research.

Routine work should be done by highly trained men. Methods should be most exact. Careful records of the methods employed and the results obtained should be faithfully preserved. In this way what appears at first to be simply dull routine may often be found to yield new scientific facts of the utmost value not only to the particular locality but to the world in general.

So far as can possibly be done, individual members of a State Board of Health laboratory staff should be assigned definite pieces of work for a given period of time. It frequently happens that problems of doubtful value are thrust upon State institutions. Opportunities for investigation must, of course, be seized at the time when they present themselves, and it is necessary to guard against the interruption of any particular piece of work which has been begun and which promises well. This requires careful adjustment of the work to the workers and the possession of some reserve force and reserve funds.

The position of a laboratory worker seems ill-defined. Up to the present time he has not been fully admitted as a consultant in medicine, although his training along all lines should have been equivalent to that of the general practitioner in addition to his special knowledge pertaining to laboratory methods and the interpretation of results obtained.

The installation of state laboratories should be made along very definite lines so that the position of this branch of scientific medicine be not jeopardized.

Examinations of tissues, tumors, pus, sputum, urine and other materials which are of direct benefit only to the medical man in the prognosis and treatment of disease, should not be conducted at the expense of the State. They constitute a part of the work of a consultant. State boards of health should only make investigations which are of especial use in the location and control of disease. Therefore, only

in the case of infectious diseases over which the state board of health has control or in the investigation of the unknown cause of disease should examinations be done by them. It is unfortunate that some state boards of health have established laboratories in which diagnostic examinations of all descriptions are made. This means that by the unnecessary assumption of the cost of such examinations the state renders it impossible for private consultants in this legitimate line of medicine to earn a livelihood and thus discourages a branch of scientific medicine.

The consideration of the exact scope of a laboratory in any given state depends so much upon local conditions that it would appear best to consider briefly some of the specific branches of work which have been undertaken by laboratories already established.

Certain state boards of health undertake the manufacture of various antitoxins which are supplied gratuitously to local health officers for use throughout their state. Amongst the states in which this is done may be mentioned Massachusetts and New York. Experience has shown that reliable antitoxins may be supplied at a very much lower cost than those obtained from commercial houses. This is a matter, however, for each state to decide for itself. As a business proposition where free antitoxins are supplied by the state, it would appear to be a good one, although the question of whether all antitoxins in the country should be inspected, standardized and passed or condemned, as the case might be, by a central government bureau, is a matter for consideration.

The establishment of institutions for the protection and cure of human beings who have been bitten by rabid animals, and provision for their maintenance, should be considered by state boards of health. By a mutual arrangement with some educational institution, such as a large university or hospital, this may be found feasible, although "a priori" it would appear that the state boards of health should have oversight over such institutions and they might well be established in connection with board of health laboratories.

The duties of health officers are such as to require very special training in matters pertaining to their legal responsibilities, the machinery of quarantine, inspection of water, milk, meat and other foods, and in these and other lines of activity some knowledge of laboratory methods is imperative. The necessity for the provision of special courses of instruction is becoming daily more apparent, and the state boards of health should be the prime movers in this direction. By collaboration with universities, or by other means, state boards of health must be prepared to institute or cause to be instituted under their supervision, special schools of instruction for those who are to become health officers. It is not too much to expect that in a short time some special diploma, as indicating the possession of special qualifications for such a post as that of health officer, may be demanded. State board of health laboratories, particularly if connected with state universities, should establish special courses, then, for teaching prospective health officers

enough of laboratory technique to insure successful collaboration of the state and local officers.

ESTABLISHMENT AND LOCATION OF LABORATORIES

Nearly all public health laboratories established in America are either connected with universities or have at their heads men with university affiliations.

These include the laboratories of Massachusetts, Minnesota, Vermont, New York State, Quebec, Ontario, Manitoba, as representing state and provincial boards of health, and New York City, Philadelphia and Chicago as representative of municipal laboratories.

In states provided with state universities it would appear to be economical and in every way satisfactory to establish a relationship between the medical laboratories of the two state institutions, i. e., the university and state board of health.

In Minnesota, where there is an efficient state university and an active and progressive state board of health, the importance of maintaining this relationship established some years ago is evidenced by the fact that the omnibus appropriation bill of the legislature at present session makes provision for a building to be erected on the university campus, of which one-third is to be used for State Board of Health laboratory purposes and two-thirds for the Department of Pathology and Bacteriology of the Medical Department of the university. The cost of this building is estimated at \$100,000, and for the equipment required by these two laboratory departments, in addition to that already available in the present laboratories, \$25,000 was requested, although only a part of this latter sum has been provided for in the bill. The balance will be made available it is expected, by the next legislature.

Two distinct staffs are provided for these two phases of work by the state and their salaries and equipment and running expenses come from two separate funds, one under the control of the State Board of Health and one under the medical department of the university. The State Board of Health has had \$10,000 per annum for the maintenance of its laboratory for the past two years, although this has been found quite insufficient. The Board has already erected and equipped on the university campus a Laboratory of Animal Research.

The following reasons for the continuance of the present arrangement in Minnesota have been very apparent:

1. For the university there is available through the State Board of Health much valuable material for the teaching of bacteriology and sanitary science which could not be obtained in any other way.
2. University students have an opportunity of seeing the actual laboratory work done for health officers throughout this state and of learning more of the practical duties of health officers than would be possible in any other way. Their proper instruction in matters of public health is of very decided benefit to the state at large on account of their influence as they go out into different portions of the state, and is particularly apparent when they become, as many of them do, health-

officers for the localities into which they go. Animal tissues examined in the veterinary work of the State Board of Health are found very useful in the university laboratories for demonstrating to medical students the relationship and similarity between diseases of men and animals.

3. The opportunities for research work along the lines of preventive medicine which are brought to light during the operations of the State Board of Health are very numerous, and this board has shown itself fully alive to its opportunities and fostered in every way possible the work of investigation along a number of lines. The influence of this work upon the university and upon the students who are taking the work in pathology, bacteriology and hygiene is of the best.

4. There is a mutual stimulation to the workers in the laboratories of the university and State Board of Health in their present close association. The teachers and researchers in the university have much the same kind of problems confronting them as have to be met and elucidated in the State Board of Health laboratories.

5. As an illustration of economy, in the matter of books it has been found possible through these two departments to acquire for the use of the state the nucleus of a good working library. Works of reference pertaining to bacteriology and hygiene are to be found largely in the laboratory library of the State Board of Health, whilst those dealing with pathology and experimental medicine are to be found in the library of the Department of Pathology and Bacteriology. It is true, too, that where a method is evolved in the one laboratory it is very quickly applied and utilized in the other, and many other illustrations of the utility of this association might be given.

The laboratories of state boards of health should be easily accessible from all parts of the state so that specimens can be forwarded without unnecessary delay, although not all investigations, by any means, can be brought to a satisfactory conclusion where materials are forwarded to the laboratory. There is a very general misapprehension in this regard, probably due to the fact that specimens, such as those from throats of diphtheria patients, blood for Widal's test and portions of the spinal cord or brain of supposedly rabid animals, may be forwarded considerable distances for examination and upon such examination reports of very great practical value may be given.

Many problems, such as investigations of water supplies and milk, and all unknown and new diseases of men and animals, require the presence of the laboratory man in the field where he can begin the necessary investigation with the materials before they have been disturbed and before putrefaction and other processes have begun. All available data must be collected and at times it seems as if the only way this can be procured satisfactorily is by the laboratory man himself. The importance of these two matters, i. e., the actual presence of the laboratory man at the original site of the inquiry and the acquirement of data essential for the proper interpretation of laboratory findings must never be lost sight of and proper division must be made for them.

It is no unusual occurrence in laboratories to receive tissues or fluids in all stages of decomposition and unaccompanied by any data whatever, sometimes even the name of the sender being omitted. Still the senders of such "miscellaneity" sometimes expect to be told the complete etiology, pathology, prognosis and treatment of the condition.

Many amusing instances could be cited which would tend to show the omniscience with which some people credit the laboratory man. Whilst this may be initially flattering it is unsatisfactory and must in most instances lead to disappointment and even unjust criticism of men and methods.

Being necessarily more familiar with the work done in Minnesota, I shall, as has been requested, consider some of the problems which have had to be met in that state and to comment shortly upon similar work by other state and provincial boards of health, in order that a somewhat general view of what is being undertaken and accomplished throughout America may be presented.

DIPHTHERIA

The examination of specimens derived from the throats or noses of suspected diphtheria patients has been undertaken by many boards of health, particularly city boards of health, for many years. New York city, Philadelphia and Boston have set an example to the rest of the world of which they may well be proud.

Minnesota was, I believe, the first to establish a state board of health laboratory and to undertake examinations for health officers and physicians of the state at large. The work begun in October, 1894, was further systematized by the permanent official establishment of the laboratory in January, 1896. The health officers throughout the state are provided with the necessary materials for forwarding serum cultures, inoculated at the bedside, to the laboratory in Minneapolis, where specimens are examined and reports forwarded by telegraph or mail within eighteen to twenty-four hours after the receipt of the specimens. Quarantine is largely regulated on the laboratory findings, and when two successive negative cultures have demonstrated the absence of diphtheria bacilli in cultures from the patient, he is released from quarantine after proper precautions have been taken in the matter of disinfection.

In Minnesota during the last two years nearly 8,000 diphtheria examinations were made, and reports which served as a basis for the regulation of the quarantine forwarded to different parts of the state by mail, telegraph and telephone.

By careful record of laboratory findings and the co-relation of clinical observation, when possible, with types of diphtheria bacilli present, etc., much interest has been added to this work, and a classification of the types of diphtheria bacilli formulated which has been employed in collaboration with other laboratories throughout America in the investigation undertaken by the Massachusetts Association of Boards of Health. This association reported upon the distribution of diphtheria bacilli in

the throats and noses of the apparently healthy and the work is familiar to all.

During the course of the routine investigations, the length of time during which *B. diphtheriae* persists in the throats of clinical cases has been studied and for the state of Minnesota it has been demonstrated that quarantine regulated by laboratory findings rarely exceed three to four weeks, twenty per cent of the patients being released in less than two weeks from the beginning of symptoms.

In the light of such results obtained in Minnesota, as they had been elsewhere, one might reasonably expect the laboratory regulation of quarantine to be unanimously adopted, although as yet local health boards are given an option of four weeks' quarantine where the laboratory is not utilized.

Other matters of very great interest and importance have arisen in connection with these examinations, such as infection with diphtheria and diphtheria-like bacilli in public institutions where children or adults are housed together in large numbers. In one of these investigations—that at the State Public School for Dependent and Neglected Children at Owatonna, Minn.—attempt was made to eradicate diphtheria bacillus from the respiratory passages of those in whom it was found, it having been ascertained that there was very widespread infection with this micro-organism. Individual isolation was tried, together with local treatment and general precautions, but it was found impossible to permanently eradicate the bacillus even though freedom of the throats and noses from *B. diphtheriae* had been demonstrated by three successive negative examinations. Upon allowing these children to mix together again, the bacilli were soon found almost as widespread as before. It would seem, therefore, that in state institutions the study and treatment of diphtheria constitutes a problem by itself. Similar conditions have since been found in other states.

In one town, containing over 300 day school children, where diphtheria had been widespread during the preceding winter and persistent during the summer vacation, by exclusion of all children who showed the typical forms of diphtheria, bacillus from attendance at school until they were shown to be free from them, the disease was wiped out. Officers of the State Board of Health made a local inspection and it is needless to say that during the examinations mentioned there came to light many conditions which had not been known to exist. Attention to these with laboratory guidance stamped out the disease and school opened at the regular time.

A study is at present in progress to determine the influence of large doses of anti-toxin upon the types of bacilli present in clinical cases of diphtheria.

Many other problems and interesting incidents have occurred, such as the regulation of quarantine in large hotels which were infected. The accuracy of the method was well shown in one instance in which material was obtained from the respiratory passages of a body which had been buried for some days. The cause of death was given as "acute

laryngitis," and the body shipped to another locality in the state. The casket had been opened and a public funeral held. The coroner exhumed the body and from the fluids escaping from the nose and in material from the trachea, typical bacillus diphtheriae was demonstrated in almost pure culture by the laboratory.

In nearly every state and province in America diagnostic work is done either by provision of state or provincial laboratories or by arrangement with certain municipal or college laboratories. Amongst the state laboratories in which this work is very well systematized may be mentioned Maryland, Massachusetts, Minnesota, New York, Rhode Island, Vermont, Manitoba, Ontario and Quebec, whilst all the large cities are provided with facilities for carrying on the work.

TYPHOID FEVER

Since the application of the method of the late Wyatt Johnston (Montreal) for utilizing dried blood for the determination of the presence or absence of the Widal reaction, it has been found possible for state laboratories to undertake this work for physicians and health officers.

Owing to the occurrence of an epidemic in Minneapolis in 1897, the Minnesota State Board of Health was placed in a position to be amongst the first in the wide application of this method. A method of quantitative determination was elaborated which very greatly increased the reliability of the test. To the end of 1902, 6,896 examinations have been made and reports furnished.

In certain laboratories, particularly that in New York City, examinations of urine and faeces for the presence of *B. typhosus* are made. These have not been found practicable, however, in many localities, as the value of the examinations does not seem to be commensurate with the amount of labor involved.

In Minnesota opportunity has arisen for the investigation of a number of interesting conditions. *B. typhosus* and organisms very nearly allied to it have been isolated from a number of rather unusual sources, such as the Minneapolis water supply, chronic sinuses and acute abscesses, the meningeal exudate in a case of cerebro-spinal meningitis following typhoid in the Fifteenth Minnesota, U. S. V., types of bacteria were obtained which resembled in almost every particular *B. typhosus*.

Most, if not all, of the states and provinces mentioned as doing diphtheritic diagnostic work afford also opportunities for examination as to the presence of the Widal reaction.

TUBERCULOSIS

In many laboratories the sputum of persons in whom pulmonary tuberculosis is suspected, is examined gratuitously. The Minnesota State Board of Health in 1898 took the position that since tuberculosis was not at that time a disease in which notification to the health officer was compulsory, examinations of sputum should not be undertaken except-

ing under certain conditions. A number of consultants in the state objected to the State Board of Health making gratuitous investigations unless the results of those investigations were utilized directly in the preservation of the public health and not simply as an aid to diagnosis, prognosis and treatment.

It seems highly desirable, however, that in all states, so far as it is possible, the example set by New York City be followed and an educational crusade undertaken. Should it be possible to obtain definite information concerning all patients suffering with pulmonary tuberculosis, the conditions under which they live, the opportunity afforded for the infection of others, and additional clinical and hygienic data upon which definite records can be built, it will become possible to prepare reliable statistics as to the distribution and spread of tuberculosis and efforts can be intelligently made for the stamping out of this disease by the education of the patients and those who are brought in contact with them. Of prime importance in this connection are the provision of sanatoria and the dissemination of the knowledge that tuberculosis is a curable disease.

Under these conditions, state board of health laboratories should undoubtedly make gratuitous examinations and report to local health officers and physicians where the conditions which must be made by the state authorities are complied with.

RABIES

The work of the laboratory has shown the prevalence of this disease in Minnesota where its existence was denied until comparatively recent years. Frequently the first information concerning the occurrence of this disease comes through the forwarding to the laboratory of material for examination. Immediately inquiries are instituted, directions given and the laboratory investigation begun. During 1901-1902, thirty-three examinations and reports have been made. They vary in interest and importance. To show the distribution of the disease it may be mentioned that rabies has been diagnosticated by the laboratory in man, horses, cattle, sheep, swine, dogs and a wolf. In one instance a history was given that one mad dog was responsible for the death by rabies of sixty-five cattle. On one farm in Minnesota, the farm bith, supposedly infected from the bite of a skunk, was responsible for the development of rabies and death therefrom in her two pups, the cat, one pig and eight cows, whilst the owner, owing to exposure to infection from a scratch from the tooth of one of his cows, received the Pasteur treatment and remained in good health. Examinations were made and a positive diagnosis of rabies given after the development of rabies in rabbits inoculated from a number of the above animals. In one instance, the presence of rabies virus was demonstrated in milk which came from a cow five days before, i. e., twenty-four hours before she succumbed to the disease.

WATER

The investigation of the public water supplies of a state is a matter which requires the most careful consideration. In the more thickly populated districts where habitations are very close together, and through household sewage and commercial enterprises the streams, lakes and other natural water supplies are in danger of being rendered useless, the necessity for the protection of public supplies is very apparent, although it should be just as obvious in all localities. As a rule, however, it is not until conditions have arisen which have no right to exist in any civilized community that any interest is betrayed in this matter.

The work of Massachusetts in connection with water supplies and sewage disposal is a model to the world. During 1902, this state spent nearly \$34,000, and has in its employ a staff consisting of twenty-five members, including engineers, chemists, biologists, bacteriologists, clerical and other assistants. Not only does the Massachusetts State Board of Health examine at frequent and fixed intervals water supplies from various portions of the state, but when a new water supply is to be instituted or change made in the existing supply in any locality, special study is given to the conditions which have to be met in that locality. The engineers and laboratory men are sent to or stationed on the ground for the necessary length of time to determine the best methods of dealing with the particular local problems presented. The experimental plant at Lawrence, Mass., need not be mentioned since its work is known all over the world. Ohio, Connecticut and other states are following along somewhat the same lines. In Minnesota it was impossible to undertake this work upon the scale demanded but a beginning has been made in a modest way by an attempt to make a chlorine survey and map of the state and by examining chemically, samples of water forwarded by different localities and where epidemics arose or where, after careful investigation by the local authorities, there seemed a reasonable ground for suspecting the water supply, a chemist or a bacteriologist or both have gone into the field to undertake examinations and collect data. Employment of competent engineers has been urged upon all local boards of health where a change in existing or the installation of a new water supply was contemplated, since the Minnesota State Board of Health has the authority to condemn water supplies. It is hoped that ample provision will be made for the carrying on and extension of this work in Minnesota.

A chemical and bacteriological survey of certain of the rivers and lakes is contemplated. In fact, a beginning has been made upon this work.

There is nothing more important than the proper supervision of public water supplies, and concerning the capacity of laboratories in this connection there is a good deal of misconception. The forwarding of miscellaneous samples by people unskilled in the work, especially where data is not available, usually leads to disappointment and may be positively harmful if definite action is to be based upon reports thereon.

In no work is the presence of the laboratory man in the field more demanded than in the investigation of water, if he is to make an intelligent report. Such report is to be interpreted and acted upon by a competent engineer where public water supplies are in question. Too often this matter is left to a laboratory man, the local health officers or a board of aldermen; whereas, it demands the collaboration of engineer, chemist and bacteriologist.

OTHER LINES OF ROUTINE AND RESEARCH INVESTIGATION

The problems which have to be met in any locality necessarily vary, and during the history of the Minnesota State Board of Health laboratory it has been found necessary to undertake a great many different kinds of work which cannot be given within the limits of this communication. A better idea may perhaps be obtained by a few specific illustrations.

1 *Meat*—The examinations of meat have usually been satisfactory owing to the paucity of that data and the method of collection and transmission. In one instance, living hog cholera bacilli were demonstrated in salted pork, of which a specimen was forwarded by the health officer because it had caused illness in his own family. It later transpired that in a herd of hogs which had been fed in the vicinity of the slaughter house, a disease had broken out and that suddenly the hogs disappeared, and it was presumed that these animals had been disposed of by pickling.

An illustration of the utility of the laboratory in matters of this kind, particularly in relation to animal disease, is afforded by the result of one investigation. The health officer (a physician) in one of the towns in Minnesota, observed in a butcher shop a small portion of tissue adherent to the ribs of a beef carcass. This was removed and sent to the laboratory. The piece of tissue was apparently a calcified lymphatic gland. Decomposition was so far advanced that nothing could be determined from a microscopical examination. Inoculation of two guinea pigs demonstrated the presence of *B. tuberculosis* which produced the disease in these animals and in their tissues the bacilli were demonstrated microscopically. The health officer made inquiry regarding the origin of the meat and found that it came from a farm where twenty-two cattle were kept, and the owner being desirous of knowing exactly the condition of his herd submitted them to the tuberculin test, whereupon twenty-seven reacted. These were killed under inspection and found to be badly diseased.

2 *Milk*—Relatively little work in the laboratory examination of milk has been done, though it is hoped that the State Board of Health may be able to encourage the establishment of dairies from which "certified" milk can be sold. Under these conditions, occasional laboratory examinations will be made of the milk which comes from such dairies. In addition to the laboratory examinations, veterinary inspection of the herd and general supervision of the hygienic surroundings of the dairy will be undertaken so that any departure from ideal conditions with respect to the milk, the animals or their surroundings, will result in the cancellation of their certificate.

3 In connection with the Minnesota State Funeral Directors' Association, the State Board of Health has undertaken the investigation of what constitutes satisfactory embalming. The two aspects investigated have been: (1) the undertakers' point of view—the aesthetic side—and (2) the public health point of view, i. e., whether embalming as done under certain conditions results in the destruction of all micro-organisms within the body. It would seem that many of the methods employed and certain of the solutions used are not reliable. This work is not yet complete. As an illustration of the unreliability of methods of embalming, the case of a boy who had died of rabies and whose body was embalmed shortly after death, may be mentioned. The method employed was the injection into the viscera and into the cavities of formaldehyde solution, but several hours after embalming material was removed from the brain and medulla and upon subdural inoculation into rabies, rabies virus was demonstrated.

4 Research work which has been accomplished by members of the laboratory staff includes the investigation of the etiology and pathology of "spotted fever," undertaken by Drs. Wilson and Chowning in connection with the State Board of Health of Montana. The hitherto unknown cause of the disease has been shown to be a micro-parasite somewhat akin to malaria and more nearly resembling the haematozoan of Texas fever in cattle. There seems to be good evidence to show that this is transmitted to man by tick bites.

The study of obscure septicaemias, tetanus, cerebro-spinal meningitis and other diseases in man has been undertaken as opportunity arose.

5 The care of infectious diseases of animals has been in the hands of the State Board of Health in Minnesota and a very great proportion of the time and energy of the laboratory staff has been spent in their study. This has afforded in many instances a better understanding of the processes in human disease, and has rendered possible the control and the study of those diseases which are common to both men and animals.

It is not fitting at this time to discuss in detail the study of animal diseases except in so far as they relate to analogous processes in man.

In Minnesota a number of opportunities for studying hitherto undescribed diseases of animals, or those in which little was known of the etiology, have arisen. The study of a large number of outbreaks of what seemed at first an unknown acutely infectious disease revealed the fact that haemorrhagic septicaemia has been demonstrated. The disease known as swamp fever in horses is at present under investigation and it would appear that this is an infectious process due to specific micro-organisms which have been isolated from many animals and which are being used in an endeavor to produce artificial infection and immunity. Some interesting observations upon infection with tuberculosis and glanders have been made during the last year, and three cases of human glanders have been studied. In such diseases as tuberculosis, glanders, actinomycosis and anthrax, it has been possible by collaboration on the part of the executive, veterinary and laboratory departments,

to demonstrate more than once the occurrence of these diseases in both men and animals. The possible infection of men from animal sources renders it very desirable that the State Board of Health have control of the infectious diseases of both men and animals, since the problems relating to etiology and hygiene are to be solved along the same lines by the same means.

The presence here today of the leading medical men of Iowa, and the interest evinced in the protection of public health, is a sufficient comment on the unselfishness of physicians who show themselves ever ready and eager to aid in the prevention of disease.

In Iowa there are many laboratories at the present time in which most excellent work is being done, and I have inferred from the remarks of the previous speakers and from the invitation extended to me to be present today that the State Medical Society wishes in every way to aid in the establishment of a state laboratory for the investigation and suppression of disease and unsanitary conditions.

In the establishment of a laboratory, I feel quite sure that Iowa will remember that such work cannot be carried on without adequate appropriation. Laboratory work in medicine to be of value must be done by reliable men of thorough training. The value of a state laboratory can be enhanced many times by the provision of some means whereby health officers and others interested in sanitary measures may be educated along certain lines which are of comparatively recent development.

Routine and investigation work are both expensive and it is very frequently necessary in order to secure the best results, in fact, sometimes in order to secure results at all, that the laboratory workers go into the field or that temporary laboratories be established during the investigation of any particular problem. If this work is to be carried forward on the very best possible lines and attempts are to be made to aid local health officers and to provide special training in sanitary lines for them, a considerable sum of money must be appropriated. It is difficult, indeed, to estimate the value of such work in commercial terms, but the value is not less because of inability to state it in dollars and cents.

I sincerely hope that it will be found possible to meet all the needs of this state and I feel quite sure if suitable financial provision be afforded, the medical fraternity of Iowa will see to it that the state gets the very possible return for the money invested.

XIV

THE OBLIGATIONNS OF THE STATE TO PROVIDE SANATORIA FOR THE CARE OF ITS CONSUMPTIVES

BY A. M. LINN, M. D., DES MOINES, MEMBER STATE BOARD OF HEALTH

The medical and scientific world is devoting much time to the study of tuberculosis. It is attracting more discussion than any other medical question. Aside from its communicability, the erection of sanatoria for its treatment, is demanding the most consideration. A disease which carries off every eighth or ninth inhabitant should have thorough consideration of medical men. No greater boon could come to men than the discovery of means whereby the ravages of this disease can be stayed and he is a benefactor to his race who can evolve a theory whereby it may be done. Theoretically, typhoid fever is a preventable disease, but for lack of knowledge, typhoid fever still prevails. In the present state of our knowledge, tuberculosis is an avoidable disease, but for lack of instruction as to the means whereby it may be prevented, the ravages of tuberculosis still continue.

Our own state affords many advantages toward an intelligent effort to eradicate tuberculosis. Her population is intelligent and her people are well housed against the rigors of our climate. Her physicians are as skillful as any state can boast of and it is a fair assumption that the state is willing to assist with a helping hand toward the consummation of so desirable an end. No fairer field could offer than this in which to demonstrate the recent accepted teachings of medical science that consumption is largely amenable to treatment. An intelligent effort to combat tuberculosis necessitates a recognition of the following facts

First, consumption is an infectious disease. Second, consumption is a communicable disease. Third, consumption is a preventable disease. Fourth, consumption is a curable disease. These facts should be common knowledge. Every characteristic of an affection which proves fatal to 150,000 of the population of the United States annually, merits profound consideration by scientific men.

CONSUMPTION CURABLE

One prominent feature in the extensive discussion of congresses on tuberculosis, is the bright ray of hope which it holds out to those afflicted with this disease. It is amply demonstrated that consumption is curable. This is proven in sanatoria in many sections of the country. In its first stages the number of cures is surprisingly large, reaching as high as 75 to 85 per cent.

Upon the fact that consumption is a curable disease must be based the plea for appeal to the state for assistance. Iowa affords many advantages for the successful treatment of tuberculosis in sanatoria. It is evident that nature has endowed some sections with great climatic advantages for the cure of consumption. These advantages result largely from the fact that the patient may be much in the open air. Pure air is a prime essential and wherever this can be obtained, the cure of tuberculosis can be effected in the first stages in a very large proportion of cases. Iowa is exempt from the misfortune of "congested centers of population." There are no large cities with densely populated tenement districts in which to breed the pestilence. The development of tuberculosis is favored by such surroundings with their accompanying want. Statistics of nine large American cities recently collected reveal an astonishing ratio of mortality from tuberculosis of .15 of one per cent. No such ratio of fatality obtains under the clear skies and among the intelligent, well fed, well housed population of our favored commonwealth. For this reason also, greater hope may be entertained for relief from curative efforts. Tuberculous patients need not be in a sanatorium alone to be treated. They need to be properly fed, properly trained, properly exercised, properly clothed and properly educated to care for themselves. Such care and training can be secured only in sanatoria constantly under the care of expert physicians. The average home provides few of the essentials required for the successful management of consumptives. In sanatoria each new symptom can be properly interpreted; every new condition more successfully combated and under hygienic surroundings more successfully cured than elsewhere.

A decade ago the physician held out little hope to his consumptive patient. Today a broader ray of hope spans his horizon. Formerly the consumptive when once the disease was firmly seated, was consigned to the hopeless list. Even at this present day when wanting the necessary means and surroundings for successfully coping with tuberculosis, the issue is very unpromising. The average physician when wanting the advantages of sanatoria, an essential need in successfully treating consumption, recognizes the gravity of the disease. Judging from his experience and observation, he concedes at once the practically hopeless condition of his patient. He advises change of climate trusting to nature and a sunny clime to do what he cannot. The large number of consumptives "with one lung entirely gone" who enjoy good health under the genial skies of California and Colorado, are living testimonials to the value of fresh air in the cure of tuberculosis. This advantage

and also many others almost as essential can be obtained in properly conducted sanatoria without the added inconvenience of being "exiled a thousand miles from home."

CURABILITY ON CONSUMPTION DEMONSTRATED

It will be asking too much to expect the state to provide the proper sanatoria for the cure of tuberculosis without first demonstrating that it may be done. Sanatoria for the treatment of tuberculosis are being constructed and operated in many of the northern states. A number of these have been in operation for a sufficient length of time to demonstrate their success. We have none in Iowa. Not another year should pass by until steps are taken toward supplying this want. The state would not be warranted in the expenditure of large sums of money without the contention is proven that tuberculosis may be cured in this climate. Statistics are obtainable from many different sections successfully operating sanatoria, some of these possessing less advantages than are afforded by the bracing atmosphere of our own state. A careful comparison of the results obtained from many different sources no more favored than our own, is that consumption is curable in this climate. The results speak for themselves.

The sanatoria have for their purpose this one end. The results are extremely gratifying. The conclusion inevitably reached from the information at hand is that pure air and a sunny climate, while essential, are not the only means required. Skillful treatment is imperative. The proper education of the consumptive is no less so. Proper exercise, proper training, proper nourishment, proper individual care, proper bathing, are each and all imperative. Possessing all these advantages which are afforded in sanatoria, more than three-fourths of the cases of tuberculosis taken in its primary stage, are cured.

The state expends annually more than \$486,000 for the maintenance of its hospitals for the insane, while \$3,564,837.15 are invested in lands and buildings for their use. Many of these insane are hopelessly incurable. No liberal-hearted citizen questions the wisdom of this expenditure. The unfortunates are well provided for, many of whom would be otherwise poorly housed and unable to obtain the necessary care and treatment to restore them to reason. The per cent of recovery is largely augmented because of the interest the state takes in these unfortunate wards. While this expenditure is made in the effort to restore to reason the demented or to maintain them where they may have reasonable comforts, the state is neglecting the opportunity to save annually many lives of value to their several communities. The expenditure for the insane is eminently right and proper, but while such an expenditure is made for the care of the insane how eminently just it would be to measure out of her abundant treasury, a small proportion of that amount for the establishment of homes for the saving of precious lives.

SANATORIA ECONOMICAL

The victims of tuberculosis fall almost invariably in the prime of life. From 18 to 35 years of age is the usual period of fatality. It is at least a fair estimate, that each human life at the age when tuberculosis proves fatal, is worth to the commonwealth not less than \$3,000. It is also fair to assume that at this age, each day's labor is worth \$1.50. The state is not only robbed of his productiveness as a wage earner, but oftentimes is under the necessity of supporting him during a lingering illness at considerable expense. There are no means by which we may ascertain the number of consumptives within the borders of our own state. Every physician recognizes the fact that they number up into the thousands. Their unfortunate condition is not beyond remedy. Here is a great work for the philanthropist and a very large work also for the commonwealth. If the same ratio of cures can be obtained in the treatment of tuberculosis in sanatoria within our own state, it is capable of demonstration that within five years enough would be saved to the state through the cures it would effect, to pay for the construction and maintenance of a well established sanatorium.

Not all of our citizens are able to meet the expense required to go abroad for treatment. A very large majority even when life depends upon it, are unable to take the advantages offered by the genial climate of Colorado and other sections. Without the means of cure within our own borders, the tuberculous poor are oftentimes condemned to a consumptive grave. Dr. S. A. Knopf, an eminent authority on tuberculosis in an address before the New York Academy of Medicine, recently said: "Say to the statesman that every life lost from consumption represents an annual economic loss of \$850; tell him that every badly ventilated workshop or tenement constitutes a danger to the public health. Ask him to enact laws whereby ample ventilation and light shall be forever secured in public and private dwellings. There are in Manhattan over 200,000 and in Brooklyn over 125,000 dark, interior rooms without a window of any kind and having no means of light and ventilation. Tell the municipal legislator that every consumptive cured in the early stages (and 75 to 85 per cent can be cured) will never become a burden to the community, which, when poor, he will invariably become, and that he will then cost a great deal more than six or eight months' sojourn in a sanatorium at a dollar a day."

DANGER OF INFECTION LESSENED

One advantage obtainable in properly constructed sanatoria is an abundant supply of fresh air. This is one of the essentials and must be provided for in the construction. Proper temperatures must also be arranged for. Light and heat are necessary. Without these the institution would be little better than the average home. The site should be elevated, free from dust and the bustle of the city. Once in such a sanatorium the consumptive not only enhances his chances for recovery,

but what is of prime importance, a center of infection is removed from his own home. In the home the tuberculous patient constantly endangers the lives of his loved ones. Without proper knowledge of its danger, the infected sputum may be carelessly cast upon the ground or floor and other members of the household are in constant danger of becoming infected. It is worthy of emphasis that too great importance cannot be attached to the removal of the tuberculous patient from the midst of the family circle. In an effort to stamp out this disease, it is of first consideration that the tuberculous patient shall not be permitted to remain surrounded by his own household. On the other hand it has been demonstrated that tuberculosis is not spread by infection from the neighborhood of an established sanatorium. Here the patient not only learns to take care of himself, but he is taught to be scrupulously careful that he shall not be the means of infecting others.

IOWA'S OBLIGATION

The State can well afford in the present abundant prosperity to provide at least one comfortably constructed building of considerable capacity in which an intelligent treatment of her consumptive citizens may be initiated. When the success of such treatment shall be established beyond question and the advantage to the State is amply demonstrated, other sanatoria may then be established, with which to enlarge the opportunities for the cure of tuberculosis within our own borders. It is a duty of the State to protect her citizens from the law breaker and the murderer. The commonwealth does nobly in providing for the blind, the decrepit and the insane. These paternal interests of the State are immeasurably larger than they were one hundred years ago. Other avenues of usefulness and duty will continue to appear. Scientific research has within recent years established beyond question the curability of tuberculosis. An added sphere of usefulness and obligation is laid upon the legislator. Private philanthropy and public treasury will be taxed to meet the splendid opportunity to save life. In a cause of so great moment the initiative should be taken at once. The coming of springtime should witness the beginning of another great benevolence of the State—the construction of a sanatorium for the cure of tuberculosis. The time is auspicious and the obligation is already upon us. The duty may not be denied. Within a decade there will be a number of these institutions within the borders of our favored State, in which will be found extended life and enlarged hope for our consumptive citizens.

Supplementary to the foregoing able and earnest plea of Dr. Linn, the Secretary, presents the following letter received from Dr. Knopf, of New York, referred to by Dr. Linn. Dr. Knopf is one of the most prominent and reliable writers upon the benefits of sanatoria in the treatment and care of consumptives that we have in this country. His writings have attracted great

attention and have been received with great favor abroad as well as at home. His letter, though personal and brief, is as follows:

New York, June 25, 1903.

J. F. Kennedy, M. D., Secretary, State Board of Health, Des Moines, Iowa:

MY DEAR DOCTOR—Under separate cover I mailed you recently a number of my publications wherein I set forth the urgent need of state and municipal sanatoria in all the states of our Union as being among the most essential factors in the combat of tuberculosis as a disease of the masses. I do not know that I can add anything to what I have said in these reprints and also in my prize essay "Tuberculosis as a Disease of the Masses and How to Combat it." It would seem to me that every statesman, physician and philanthropist who has the welfare of the people at heart should consider it his sacred duty to do his very best toward the creation of such institutions. Pulmonary tuberculosis is a preventable and curable disease, and it is a sad, and I might almost say, a humiliating and disgraceful fact that thousands of our fellow citizens must die every year, not because their disease is incurable, but because there are not enough places to cure it.

Modern phthisiotherapy has demonstrated that the sanatorium can accomplish most satisfactory results in nearly all climes, and surely the State of Iowa can offer enough suitable sites for the establishment of a well-conducted State sanatorium for the treatment of its consumptive poor. Through the sanatorium, which, when properly conducted, is not a danger to the neighborhood but a blessing, people within and outside of the institution will become practically educated and familiar with the best means of preventing the disease. From fifty to seventy-five per cent of patients will be cured after a sojourn of eight or ten months in a sanatorium. They return to their respective communities not only as breadwinners but also as educators in the prevention of consumption and in hygiene in general. Instead of great economic loss which is now the result of the uncared-for consumptive, the commonwealth will be the financial gainer. In short, a sanatorium established by a state for the treatment of its consumptive poor, if well equipped and well conducted, will prove an educational hygienic, moral and economic factor, adding to the health and prosperity of the community at large.

No state in this great country should be without such an important and much needed institution. Let me hope that the State of Iowa will not be behind in the work toward the solution of this important tuberculosis problem. To you personally I desire to express my best wishes for the success of your noble endeavors, and remain,

Very sincerely yours,

S. A. KNOPF.

XV

BRITISH CONGRESS ON TUBERCULOSIS

The following concise and interesting report of this noted Congress, held in London, England, from July 22nd to 28th, 1901, inclusive, was made to the Surgeon General of the U. S. Marine Hospital Service by passed Assistant Surgeon A. R. Thomas, U. S. M. H. S., and reprinted by permission:

OPENING OF THE CONGRESS

The congress was opened by a general session on the afternoon of July 22d, the Duke of Cambridge occupying the chair on behalf of His Majesty the king. The delegates and members of the congress were welcomed by the various bodies of the city, and one delegate from each country responded. The further meetings of the congress were divided into four sections, to meet each morning as follows: Section 1, state and municipal; section 2, medical, including climatology and sanatoria; section 3, pathology, including bacteriology; section 4, veterinary. In addition, on each afternoon of the congress, a general meeting was held and an address delivered on some topic of common interest to the whole congress. Various forms of social diversion were provided during the week, including garden parties, receptions, and a dinner to the foreign delegates.

PROFESSOR KOCH'S ADDRESS ON TUBERCULOSIS

The first general meeting on July 23d was addressed by Professor Koch of Berlin, his subject being, "The fight against tuberculosis in the light of the experience that has been gained in the successful combat of other infectious diseases." He said that since the discovery of the bacillus of tuberculosis it was evident that tuberculosis was a preventable disease, and in combating it as such it would draw valuable lessons from our experience in other pestilences, for we had learned that every disease must be treated individually and measures adopted according to its special nature and etiology. An illustration of this principle is plague, where

formerly the patient was considered in the highest degree a center of infection, but now only patients with plague pneumonia are so regarded, and we know that the chief source of contagion are the rats affected with plague, and effective work could be done in exterminating rats, otherwise the chief etiological factor is not touched. Cholera offers another example, for here the chief propagator of contagion is the water, and so the water is the first thing to be considered. Hydrophobia is also instructive, for while inoculations are curative, they are not preventive of infection, and the only real way of combating this pestilence is by compulsory muzzling. Lastly, leprosy is closely akin to tuberculosis, and like it only spreads from man to man by close contact, so to combat it it is necessary to prevent close communication of the well and sick, and so isolation is adopted.

In by far the majority of cases of tuberculosis the disease has its seat in the lungs, and has also begun there. From this it is justly concluded that the germs of the disease—that is, the tubercle bacilli must have got into the lungs by inhalation. As to the question where the inhaled tubercle bacilli have come from there is also no doubt; on the contrary, we know with certainty that they get into the air with the sputum of consumptive patients. This sputum, especially in advanced cases of the disease, almost always contains tubercle bacilli, sometimes in incredible quantities; by coughing and even speaking, it is flung into the air in little drops—that is, in a moist condition, and can at once infect persons who happen to be near the coughers, but it may also be pulverized when dried in the linen or on the floor, for instance, and get into the air in the form of dust.

The bacilli may get into other organs in the same way, but rarely. Transmission by heredity is extremely rare.

It is generally assumed that another source of infection exists in the transmission of germs from animal to man, but investigations by him have led to a contrary conclusion. Experiments were conducted by feeding tubercular free young cattle and swine with tuberculosis material from bovine and human sources, with the result that from bovine sources the animals became infected, while from human sources they remained free, and the conclusion would seem to be that human tuberculosis differs from bovine and cannot be transmitted to cattle. But more important is the question as to whether bovine tuberculosis can be communicated to man, but this is impossible of absolute demonstration. As large quantities of butter and milk are consumed containing bacilli, it would seem that many cases of tuberculous affections should be caused, but from the examination of a large number of post-mortem reports, it was found that primary intestinal tuberculosis was extremely rare even in children in whom it ought to be most common.

"Though the important question whether man is susceptible to bovine tuberculosis at all is not yet absolutely decided, and will not admit of absolute decision today or tomorrow, one is nevertheless already at liberty to say that if such a susceptibility really exists the infection of human beings is but a very rare occurrence. I should estimate the extent of the infection by the milk and flesh of tuberculous cattle and the

butter made of their milk as hardly greater than that of hereditary transmission, and I, therefore, do not deem it advisable to take any measures against it."

The main source of infection in tuberculosis is, therefore, the sputum of patients, and to prevent this infection is our first object. Isolation is impracticable and also unnecessary. If proper precautions are taken no infection need occur, but this is difficult among the poor where there is overcrowding, bad ventilation, and often whole families are thus infected. Therefore, the first indication is to improve the social condition of the poor, and, secondly, to provide consumptive hospitals where patients in the later stages may obtain treatment gratis, and where the patient would be willing to go. England is the only country having any great number of such institutions, and the diminution of consumption in this country is probably due in a large measure to this reason. Another measure especially valuable is compulsory notification, which not only shows the number of tuberculous persons, but also where they reside, and, therefore, where disinfection and instruction are necessary. Disinfection is of the greatest importance, not only of rooms and houses, but also of infected bedding and clothing. Education of the public is of great benefit, for it has already done much to limit infection.

On the other hand, for treatment, are the sanatoria, which have lately come into vogue, and can cure a certain number in the early stages of the disease. This number is small, however, in comparison with the whole number of infected persons, and its value should not be over-estimated.

"And now, in conclusion, to glance back once more to what has been done hitherto for the combating of tuberculosis, and forward to what has still to be done, we are at liberty to declare, with a certain satisfaction, that very promising beginnings have already been made. Among these I reckon the consumption hospitals of England, the legal regulations regarding notification in Norway and Saxony, the organization created by Biggs in New York, the sanatoria, and the instruction of the people. All that is necessary is to go on developing these beginnings, to test and, if possible, to increase their influence on the diminution of tuberculosis, and wherever nothing has yet been done to pursue similar measures."

DISCUSSION OF PROFESSOR KOCH'S ADDRESS

It is needless to say that this address has given much ground for discussion throughout the congress. Lord Lister remarked that it would be a serious and grievous thing if it should lead to any relaxation of the efforts being made at present to provide a pure milk supply, and it should turn out that these views of Professor Koch were erroneous. He cited the instance of smallpox and cowpox and stated that while smallpox could not often be inoculated from man to cows, it was possible to inoculate monkeys from man and afterwards cows from the monkeys, and we now know that the two diseases are identical. He further said that he agreed with the speaker that further investigation was desirable.

Professors Nocard, Bangs and Sims Woodhead all agreed with Lord Lister.

PROFESSOR BROUARDEL'S ADDRESS

The third general meeting was addressed by Professor Brouardel, of Paris, on "The measures adopted by different nations for the prevention of consumption." He pointed out the havoc that was caused by this disease and the slowness in recognizing its dangers until its infectiveness was proven by Willemin and Koch. Before this England had recognized the dangers arising from damp and dark dwellings and seventy years ago began the crusade for healthy dwellings. The grounds of prevention in all countries are identical—that is, that tuberculosis is preventable and curable. First comes legislation and the education of public opinion. Pamphlets are issued for the information of the public in England by the National Association for the Prevention of Consumption, and in Germany societies were founded for building sanatoria and popularizing sanitary ideas. Belgium has a national league against tuberculosis. Norway has voted money for the printing of a popular work on tuberculosis. In France they have collected together those who can teach, and popular lectures are given, and on every hand societies for the prevention of tuberculosis are springing up. This year 88 lectures on tuberculosis had been given to 12,000 pupils. Thus gradually in all countries the public are beginning to realize that personal care and cleanliness are necessary to obviate contagion, and are also realizing that other idea to my mind equally important, that a consumptive patient is only dangerous if the necessary precautions are not taken around him, and if he himself does not take them to protect his relatives, friends and fellow-workmen from contagion. The great danger is spitting, and once this disgusting habit has been suppressed, consumption will decrease rapidly. In the United States the habit is against the law, and in Sydney, New South Wales, a fine of £1 is imposed for spitting in the streets. The sputum is not dangerous if put in antiseptic receptacles, or if thrown in dry and well-lighted places it soon loses its dangerous properties; thus, more victims occur in dark and ill-ventilated houses, for here it retains its virulence a long time. Thus the importance of healthy dwellings becomes plain, and is recognized by various countries, notably England, which has several acts dealing with workmen's dwellings, and model dwellings are largely built. In Germany also an effort is being made in this direction. Belgium is also one of the most enthusiastic countries in taking up this subject, but in Denmark building societies have flourished best of all. In France also something has been done in this direction, and all authors agree that mortality is lower in these healthy houses and in the town in which they are built. Bad quarters exist in all towns, which are a hotbed of tuberculosis, and these must be found and demolished. Alcohol is another potent cause of tuberculosis, and it has been shown that the death rate is higher from this disease in the different classes of society in proportion to the amount of alcohol consumed. In scrofulous children and those reared in unhealthy dwellings the duty is to build up the body. For this purpose there are established in France

and Italy and other countries, sanatoria at the seaside for such children, with good results. France has 14 such institutions that accommodate more than 2,000 children a year.

Prevention also follows the line of food, and the inspection of meat is in this direction. However, the great danger here is in the private slaughterhouses where no inspection occurs. In milk the danger is in tuberculosis mastitis and here the danger can only be recognized by examination of the udders. In England it is a noticeable fact that while the deaths from tuberculosis have decreased 45 per cent in the last fifty years the deaths in children have increased 47 per cent, which is attributed to the increase of abdominal tuberculosis due to milk. Strict inspection measures are adopted in Norway, Sweden and Denmark.

Coming to the curability of tuberculosis, we know it is curable in all stages, but especially in early stages, as is abundantly shown by post-mortem examination and the finding of cicatrices of all sizes in the lungs. For this object come dispensaries where the patient can obtain treatment in the earlier stages and receive instruction regarding measures of hygiene and feeding, and if necessary be sent later to a sanatorium. In Germany there are polyclinics for tuberculosis, in the large towns, where the patient can be treated throughout the illness or till sent to a sanatorium, and a committee connected with it looks after the patient at home, tells his wife what to do, and sees that the house is kept clean and as far as possible, relieves the poverty caused by the breadwinner's illness by means of a bank kept for such purposes.

The same idea was first carried out in France by Chalmette but he went further in going and seeking out the consumptive and inviting him to come to the dispensary, and he has established a dispensary of these lines at Lille, and several others have been founded on similar lines in various parts of France.

Some patients must be sent to sanatoria, and here the principles are rest, moral and physical, stuffing, and the open air treatment. In Germany this system is carried out most enthusiastically, and there are 83 sanatoria opened already or ready to open which can accommodate 12,000 patients each year. They have been built by local insurance, by sickness banks, by the manufacturers who have combined to found sanatoria for their workpeople, by parishes which have united for the purpose. There are more of the latter. In some parts a tax of from 1d. a head has been exacted. The state has also founded several sanatoria for its servants. Patients remain three months, and it is thought advisable that they return for a month's treatment the next year. The results seem satisfactory, for from 46 to 60 per cent of those who leave were able to work. Germany's example has been followed by England, Scotland, Australia, Canada, Austria and America, also in Russia, Sweden, Denmark, Norway, Italy and the Netherlands sanatoria are building, and in France several sanatoria have been opened. In the United States, also, wards are assigned in hospitals for the exclusive use of consumptives. From an international standpoint, it would seem that consumption cannot be treated as plague and the other pestilences, but much can be done by dis-

infection of railroad carriages, steamboats and hotels. In the United States hotel keepers are obliged to notify the authorities if they receive a consumptive patient, and disinfection of the room so occupied is compulsory. The minister of the interior in Germany has brought in even more stringent measures. Every doctor who attends a case of pulmonary or laryngeal tuberculosis is bound to report it in writing to the police as soon as he has made his diagnosis. After death from tuberculosis the room in which the patient has died has to be disinfected and also his belongings. Hotel proprietors, furnished housekeepers, asylums and other public institutions are compelled to notify at once every case of tuberculous disease which arrives in their establishments.

PROFESSOR MCFADYEAN'S ADDRESS

The fourth general meeting was addressed by Prof. John McFadyean, of the Royal Veterinary College, his subject being "Tubercle bacilli in cow's milk as a possible source of tuberculous disease in man." He said that until a few days before he had not thought he would have to argue the question as to the identity of human and bovine tuberculosis, but Professor Koch's address made this necessary. He thought Professor Koch's train of reasoning appeared to be the following:

First. That the bacilli found in cases of bovine tuberculosis were much more virulent for cattle and other domestic quadrupeds than the bacilli found in cases of human tuberculosis.

Second. That this difference was so marked and so constant that it might be relied on as a means of distinguishing bacilli of bovine tuberculosis from those of the human disease, even assuming that the former might occasionally be found as a cause of the disease in man.

Third. That if bovine bacilli were capable of causing the disease in man, there were abundant opportunities for the transference of bacilli from the one species to the other, and cases of primary intestinal tuberculosis from the consumption of tuberculous milk ought to be of common occurrence, but post-mortem examination of human beings proved that cases of primary intestinal tuberculosis were extremely rare in man, and, therefore, it must be concluded that the human subject was immune against infection with the bovine bacilli, or was so slightly susceptible that it was not necessary to take any steps to counteract the risk of infection in this way.

He thought one of these premises was ill founded and the others had little or no bearing on the subject, and that reasonable ground remained for regarding tuberculous milk as distinctly dangerous to man. He argued that even if bovine bacilli were more virulent to cattle, and that human bacillus had little virulence, the opposite did not follow, and the probability was all the other way, for it was known that those bacteria that were common to all the domesticated animals were also pathogenic to man. As for infection from cattle to man, he quoted the post-mortem records from the hospital for sick children in London and the Royal Hospital for sick children in Edinburgh. Out of 547 cases of tuberculosis the proportion of primary infection through the intestine was found at the

former institution to be 29.1 and the latter 28.1 per cent. He hence submitted that there was strong *prima facie* evidence that animals were a possible source of human tuberculosis. He thought the diseased cows were only dangerous when the udders were affected, for it was estimated that 30 per cent of the milk cows in England were tuberculous, and only about 2.2 per cent had the udder affected. In the latter class, the milk often contained large quantities of the bacilli and the danger was greater because in the early stage such udders were quite painless and no change showed in the character of the milk. Another source of contamination of milk that could not be lost sight of was dust and dirt. As a remedy, he thought the tuberculin test impracticable, because too expensive and too disturbing to the cattle industries. He, therefore, recommended periodical inspections at brief intervals by competent inspectors. He supported also the compulsory notification of udder disease and of symptoms of tuberculosis in milked cows and the interdiction of the sale of milk from any animal suffering from tuberculous disease of the udder, or exhibiting clinical signs of tuberculosis.

DR. BIGGS ON "THE NOTIFICATION OF TUBERCULOSIS"

In the section of state and municipal Dr. Biggs of New York presented a paper on "The notification of tuberculosis," dealing mainly with New York City, but he also mentioned that notification was also compulsory in Michigan, Buffalo and Philadelphia. New York was the first to pass such a law in 1893, but the compulsory notification was not complete, physicians in private practice only being invited to notify. Sputum was examined free of charge and at the end of the third year 8,000 specimens per year were examined. Efforts were made to disinfect premises in which death from tuberculosis had occurred. In 1897 it was resolved by the board of health of New York that tuberculosis being a dangerous and contagious disease, every physician should report in writing as to patients suffering from that disease within one week of being called in, and a sum was appropriated for the care of poor tuberculous patients. This resolution was not strictly enforced as regards private patients, but public opinion was gradually decreasing the number of cases not notified. In consequence of these measures and the better treatment of consumptives, there has been a decrease of 30 per cent in mortality arising from tuberculosis.

ALDERMAN MACDOUGALL'S PAPER ON VOLUNTARY NOTIFICATION

Alderman Macdougall of Manchester read a paper on the working of the voluntary system of notification in that city. At first it was restricted to institutions, but later, in 1900, private physicians were invited to notify, in order that—first, the assistant medical officers might visit the homes of patients and instruct the household in the precautionary measures to be adopted, leaving with them printed instructions. Second, that the nature of measures of disinfection required might be determined. Third, that they should make inquiries into the exposure to infection of individual cases from relatives, work mates, friends, etc., and into their occupations and places of work, the various houses which they had in-

habited, their physique, personal habits, etc. Fourth, that supervision might be maintained over infected households, change of address ascertained, personal precautions and household cleanliness maintained, and necessary measures of disinfection carried out from time to time. Fifth, that it might be ascertained if the required measures of disinfection were being executed. Sixth, that assistance might be given in getting bacteriological examination of sputum in suitable cases. Seventh, that information regarding households might be obtained to serve as a basis for hospital provision.

The number of cases notified from September, 1899, to March 31, 1901, had been 2,338, and of these 1,701 had been in institutions and 638 in private practice. In addition to disinfection and cleansings, notes were made of centers of infection.

Dr. M. Holmboe said that in Norway notification was limited to pulmonary tuberculosis and tuberculosis of the skin and urinary organs that could be positively diagnosed. Deaths from tuberculosis must be reported and the premises be disinfected. He thought compulsory notification was necessary to give authorities power to enforce sanitary orders. Various other members expressed their opinion, all being in favor of some form of notification, and the following resolution was passed: "That the voluntary notification of cases of phthisis attended with tuberculosis expectoration and the increased preventive action which it has rendered practicable has been attended by a promising measure of success, and that the extension of notification should be encouraged in all districts in which sufficient sanitary ministration renders it practicable to adopt the consequential measures."

PREVENTION OF TUBERCULOSIS IN CHILDHOOD

Two papers on the prevention of tuberculosis during childhood were presented. One by Dr. Leon Petit, of Paris, reporting the establishment of dispensaries for children in that city and the good that had resulted. Dr. Knopf, of New York, read a paper on the state and individual prophylaxis of tuberculosis during childhood, advocating the separation of consumptives and children and the doing away of many habits tending to infect children, such as kissing and the tasting of food.

THE INFLUENCE OF HOUSES AND AGGREGATION

Under the "Influence of houses and aggregation," Dr. Coates, of Manchester, reported experiments made with dust from various localities. In 23 specimens taken from dirty and infected houses, 66 per cent proved infective. In 10 clean but infected houses 50 per cent proved infective, and from the waiting room of a large consumptive hospital and a large general hospital the results were negative, but specimens from a railroad waiting room gave positive results in 2 cases. For disinfection he recommended the use of a solution of chlorinated lime, $1\frac{1}{2}$ ounces to a gallon. Walls, ceilings and floors, and all suitable articles of furniture were to be thoroughly washed with this several times. Clothing and bedding should be steamed, and wall paper in clean houses and with no sputum attached might be cleaned with bread dough.

Various members spoke of spittoons, and the general opinion seemed in favor of some form of combustible receptacle contained in a metal or porcelain carrier.

CONTROL OF MEAT AND MILK SUPPLIES

Mr. Shirley Murphy opened a discussion on the control of meat supplies. He said there was very little new to be said on the subject. He gave a review of the measures adopted in England for the prevention of the sale of tuberculous meat, but added that there was always the possibility of a tuberculous animal being slaughtered under conditions avoiding inspection. Other speakers spoke in the same vein.

In the discussion of milk supplies, nearly every speaker took occasion to disagree with Professor Koch, and to express the opinion that tuberculous milk was dangerous to man as a food. Professor Delapine thought no animal could be declared free of tuberculosis unless the tuberculin test had been applied.

SANATORIA

In opening a discussion on the provision of sanatoria, Sir James Creighton-Browne said that sanatoria were needed for two reasons, first to cure those affected in curable cases, and second that incurable cases might be removed so as not to be a source of infection as well as having a life prolonged and the comforts necessary to their condition. It was held that the tendency to spontaneous cures were what made sanatoria so necessary, and it ought to be brought within the limit of all classes. He thought there ought to be three classes of sanatoria, first, for the affluent; second, for the competent, and third, for the poor.

CLIMATOLOGY

In opening a discussion on climatology, Dr. Theodore Williams said that in whatever climate the patient was treated the great object was to get him into the open air and to live under the most favorable hygienic conditions. The climate that best fulfills the open-air treatment need not be a very warm or a very cold one, but should be dry and stimulating, and with abundant sunshine, admitting of much exercise and producing nervous and muscular vigor. Climates might be classified as, first, marine climates, including sea voyages; second, mountainous climates, partly inland, partly marine, and third, mountainous climates. Under marine climates are the south coast stations of England and Ireland having an equable temperature and a good deal of wind with considerable rain and many rainy days. They were suitable for chronic cases and especially the strumous forms. Sea voyages were going out of vogue, partly at least, because steamers made the trip too short, and also because of the disadvantages of the close cabin and the lack of exercise and also because other methods of treatment had come into use.

Under dry warm climates are, first, the desert, giving dryness and warmth, sunshine and great radiation with the consequent great variation of day and night temperature, and the asepticity of the atmosphere. In experience these climates produce a diminution of secretion and

improvement and quiescence, but seldom absolute arrest. Second, comes the warm dry climate of the Mediterranean Basin. It is cooler and more stimulating than the desert and clearer and with less fog and rain than the English-coast stations, and the cool nights are especially advantageous.

Mountainous climates are characterized by: First, diathermancy; second, asepticity, and third, by the physiological effects on the body, tanning the skin, at first quickening, then slowing the circulation, and fuller respiration accompanied by dilatation of the thorax. He gave statistics of 385 cases treated in high altitudes in various places, the treatment averaging eleven and a half months. The results were that 173 or 45 per cent completely recovered, 77 or 20 per cent greatly improved, and 54 or 14 per cent improved, so that in all 334 improved. His conclusions as regards the effects of the high altitude on consumption are, first, that the respiration of the rarified atmosphere produces hypertrophy of the healthy lung and local pulmonary emphysema around the tuberculous lesion, giving rise in due time to thoracic enlargement; second, that it is possible the arrest of tuberculous disease is at least partly due to the pressure exercised on the tuberculous masses by the increasing bulk of the surrounding lung tissue, which, by emptying the blood vessels, promotes caseation and cretification of the tubercle; third, that these changes are accompanied by general improvement in digestion and assimilation, the cessation of all symptoms of disease, the return of normal functions by gain of weight, of color, of nervous and muscular activity, and of respiratory and circulatory power; fourth, that arrest of disease takes place in 58 per cent of tuberculization cases and great improvement in 87 per cent; that in excavation cases arrest occurs in 21 per cent, and great improvement in 61 per cent; fifth, that the climate is especially beneficial in hemorrhagic phthisis and phthisis in which hereditary predisposition is strongly marked, and is well suited to chronic tuberculosis of the lungs in general; sixth, that males and females seem to do equally well and to profit most between the ages of 20 and 30, and seventh, that the climate is contraindicated in acute phthisis, catarrhal phthisis in laryngeal phthisis, in cases of phthisis accompanied by great nervous irritability, in cases of double cavities with fibroid phthisis and in all patients whose pulmonary surface has been so much reduced from any cause that it does not suffice for complete respiratory purposes.

Dr. Burney Yeo followed on much the same lines, the objects of treatment by climate being, he stated, to arrest catarrhal conditions of the air passages, to improve nervous and circulatory tone, to increase the activity of the digestive functions and thus stimulating nutrition by promoting the desire and increasing the power to exercise, to raise the moral tone by affording a clear, bright and cheerful environment, and to diminish by its asepticity bacteriological activity.

In conclusion, he stated that a suitable climate relieves or removes catarrhal conditions accompanying the disease in a number of cases; it raises nervous and vascular tone, it increases muscular energy and the ability as well as the desire for exercise; by rendering an open air life

possible, it increases the aeration of the lungs and diminishes the activity of bacterial agencies. It improves the tone and promotes the activity of the digestive functions.

In regard to suitable climate, he said that cases treated at the commencement of the disease, and who were otherwise in good health, may be permitted a certain amount of latitude in the choice of climate. Second, for progressive febrile cases, repose in bed or on the couch at home is the best condition practicable for the free access of air and sunshine. Third, for catarrhal cases, soothing climates like Maderia or Teneriffe are best. Fourth, for rheumatic or gouty cases of the fibroid type, dry marine climates or the desert are most suitable.

USE OF TUBERCULIN

The discussion regarding the therapeutic and diagnostic value of tuberculin was opened by Dr. Heron, who gave a short history of it, and thought it had fallen into disuse owing to its frequent use in unsuitable cases, its administration in too large doses, neglect of the rule that a dose should never be given until the patient's temperature had been normal for the previous twenty-four hours at least, neglect of the rule that the dose of tuberculin should never be increased, but rather diminished, when its administration has been followed by a rise of temperature, and the prejudice raised against the remedy among both medical men and patients, because of the severity of the symptoms which not seldom follow upon its use. Of 51 cases treated by him, 17 were lost sight of, and of the remaining 34, 16 were known to be well. Lupus did well up to a certain point and then relapsed. One case of lupus treated by the new tuberculin recovered permanently. Tuberculin was now known to be worse than useless in cases of mixed infection. For diagnosis, tuberculin was most valuable, making very early diagnosis possible, when the chances of recovery were best.

Professor Koch said that if the diagnostic injections were properly made in the human subject, it was a valuable method and without danger. The injections should be small enough in weak subjects; not more than .1 mm. was enough to begin with, and no second injection should be given until the temperature was again normal. If the first injection gave a faint reaction a second injection of the same quantity frequently gave a very marked reaction. Over 3,000 cases had come under his observation, and he concluded that the diagnostic test of tuberculin was almost absolute. As a therapeutic agent he had no doubt it was of great value in early uncomplicated cases, and when used in these cases a complete cure frequently resulted. In advanced cases it was necessary that the temperature should be normal before the injections began. The treatment should be continued over a long period, if necessary, with intervals of three or four months, until they gave no reaction. In answer to a question, Professor Koch said the tuberculin was prepared from tubercle bacilli of human origin, but that the reaction was produced in both man and cattle, and though the bacilli were different they possessed a common "group" reaction.

Many members spoke for and against the use of tuberculin, but most were agreed that its diagnostic value was great and harmless, but opinion was much divided on the curative qualities.

DISCUSSION ON SANATORIA

In opening the discussion on sanatoria, Dr. Clifford Allbutt said that open-air treatment was possible at home, but was best carried out in sanatoria and had been perfected there. The coldest air possible was the best stimulant for the appetite and made forced feeding unnecessary, but it varied for different individuals. What a young man could stand was too cold for an old or a weak one. Two degrees of cure were possible in sanatoria, arrest or obsolescence; but the latter was hardly possible with the poor, requiring on the average two winters and one summer; so an economic cure was to be aimed at rather than absolute cure. Six months would be required in the majority of cases. He protested against the emptiness of mind advocated by some reformers and would give amusement and tranquil occupation.

Dr. Phillip, as a result of ten years' experience, said that each case must be treated per se; rest and exercise must be considered together and regulated by the temperature and the pulse; a full dietary was necessary, but not forced feeding. The location of the sanatorium was not dependent upon the surroundings or ground; it could not be too far from the large centers of population, and it was better if patients were treated in their native air.

Dr. Burton-Fanning presented a report of a sanatorium treatment in England, covering 716 patients from sanatoria where patients paid their way. As a result, 92 per cent gained weight; quiescence or definite recovery occurred in 25.1 per cent; of patients without fever or quickened pulse, 63.6 had quiescence or recovery.

THE ROENTGEN RAY IN TUBERCULOSIS

In discussing the use of the Roentgen ray in the diagnosis of pulmonary tuberculosis, Dr. Walsham said that in normal lungs they were quite transparent from apex to base, with the exception of a few ill-defined shadowy lines to the right of the heart. The movement of the diaphragm like a piston up and down was ordinarily equal on the two sides of the chest, but in disease was much less on the affected side, even when the disease was limited to one apex. In well-developed cases of tuberculosis the diseased areas showed as flocculent shadows punctate in parts. He would say that the rays could not decide the earliest stage of tuberculosis in the lungs, but they would definitely show tuberculosis, and that at a very early stage.

THE TUBERCLE BACILLUS

Dr. Alfred Moeller, of Belzig, in opening the discussion of the morphological and physiological variations of the bacillus of tuberculosis and its relation to other bacteria resistant to acids and to the streptothrices, said that he had shown that bacteria which were acid fast were

not necessarily tubercle bacilli, as, for instance, the smegma bacillus and the bacillus of avian tuberculosis. A series of bacilli resembling the tubercle bacillus had recently been found, including the butter bacillus and the Timothy bacillus. The tubercle bacilli, like all the acid fast bacilli, seemed to belong to the streptothriciae.

RESOLUTIONS ADOPTED BY THE CONGRESS

The last general meeting was held on the afternoon of July 26th and the following resolutions were adopted:

1. That tuberculous sputum is the main agent for the conveyance of the virus of tuberculosis from man to man. Indiscriminate spitting should, therefore, be suppressed.

2. That is the opinion of this congress that all public hospitals and dispensaries should present every out-patient suffering from phthisis with a leaflet containing instructions with regard to the prevention of consumption, and should supply and insist on the proper use of a pocket spittoon.

3. That the voluntary notification of cases of phthisis attended with tuberculous expectoration and the increased preventive action which it has rendered practicable has been attended by a promising measure of success, and that the extension of notification should be encouraged in all districts in which efficient sanitary administration renders it possible to adopt the consequential measures.

4. That the provision of sanatoria is an indispensable part of the means necessary for the diminution of consumption.

5. In the opinion of this congress, in the light of the work that has been presented at its sittings, medical officers of health should continue to use all the powers at their disposal and relax no efforts to prevent the spread of tuberculosis by milk and meat.

6. That in view of the doubts thrown on the identity of human and bovine tuberculosis, it is expedient that the government be approached and requested to institute an immediate inquiry into this question, which is of vital importance to the public health and of great consequence to the agricultural industry.

7. That the educational work of the great national societies for the prevention of tuberculosis is deserving of every encouragement and support; it is through their agency that a rational public opinion may be formed, the duties of public health officers made easier to perform, and such local and state legislation as may be required called into existence.

8. That this congress is of the opinion that a permanent international committee should be appointed to collect evidence and report on the measures that have been adopted for the prevention of tuberculosis in different countries, to publish a popular statement of these measures, to keep and publish periodically a record of scientific research in relation to tuberculosis, and to consider and recommend measures of prevention. This congress is further of opinion that such a committee should consist of representatives to be elected by the great national societies formed for the suppression of tuberculosis and also representa-

tives nominated by various governments. It is further of the opinion that all international committees and great national societies whose object is the prevention of tuberculosis should be invited to co-operate.

9. In the opinion of this congress, overcrowding, defective ventilation, damp general unsanitary condition in the houses of the working classes, diminish the chance of curing consumption and aid in predisposing and spreading the disease.

10. That while recognizing the great importance of sanatoria in combating with tuberculosis in countries, the attention of governments should be directed towards informing charitable and philanthropic individuals and societies of the necessity for antituberculous dispensaries as the best means of checking tuberculous disease among the industrial and indigent classes.

XVI

SMALLPOX—DIAGNOSIS AND PREVENTION

BY J. H. SAMS, M. D., CLARION, MEMBER OF STATE BOARD OF HEALTH,
FOURTH PUBLIC HEALTH DISTRICT

In attempting to write on the subject of smallpox it is not my intention to enter into a purely scientific discussion of the subject, nor, in fact, to discuss at any very great length the symptoms and diagnosis of smallpox, as these are, through the instrumentality of smallpox circulars issued by the State Board of Health, health bulletins, medical journals and text-books, well known by physicians, and quite so by a portion, at least, of the laity.

TYPES OF THE DISEASE

There is, however, so much contrast between the older description of smallpox as related in the text-books and the behavior of the present epidemic, that there is some excuse for a physician, on being called to his first mild case, for overlooking the true condition. Though mild cases are described it is the severer cases that are given the most attention. Flint says, "Not every smallpox vesicle is umbilicated; in mild cases there may remain no trace of the eruption." Some of the pocks do not break, but harden, and their contents are absorbed. It is probable that in these cases the corium is not involved in the suppuration, or that the vesicles are not converted into postules. Some persons are wholly insusceptible without vaccination. Some have become susceptible after having been insusceptible for many years.

Osler's "Practice of Medicine" reads: "Whether pitting takes place depends a good deal upon the severity of the disease." In the majority of cases Sydenham's statement holds good, that: "It is very rarely that the distinct (discreet) smallpox leaves its mark."

"The American System of Practical Medicine," by Loomis-Thompson, quotes Dr. Wm. M. Welch as saying: "There may be only a few small pustules scarcely definite enough to verify the disease. Discreet variola is attended by no great danger." It is well known that in some unprotected persons there is naturally but slight susceptibility to

the infection, and the disease in this class is mild and of short duration. Hyde says: "The most significant and startling contrast between modified and unmodified smallpox is exhibited when the patient, after reaching the stage described of complete development of pustules, suddenly ceases to betray any further significant symptoms of smallpox. The pustules dry rapidly into crusts which are thrown off and leave the skin either somewhat stained at the point where the crusts formed, or in nearly its normal condition."

CAUSE OF ITS SPREAD

In the face of these statements by men of recognized ability and experience, we still have some physicians in Iowa who, I am sorry to say, are calling their mild smallpox cases chicken-pox, Cuban itch, or perhaps, not giving it any name save to say that it is *not smallpox*. In a good many instances this is not from lack of ability to make a proper diagnosis, but from the selfish or timid idea that if they are called to those cases and diagnose smallpox they will be replaced by some physician who will diagnose chicken pox, Cuban itch or anything but smallpox, and the family thus escape quarantine and the regulations governing such cases. This is a pitiable condition of affairs in some localities, and a condition which, through the action taken by our State Board of Medical Examiners in dealing with some physicians when they repeatedly fail to recognize or diagnose this disease as smallpox, even after efficient counsel has made a diagnosis of smallpox clear, is making rapid change in the right direction. Some, in the early part of the present epidemic, have been honestly mistaken in diagnosis, but when their mistake was recognized they were quick to acknowledge the same, and energetic in their efforts to prevent further spread of the contagion.

The mildness of the epidemic has, no doubt, been the great contributing factor in the spread of the disease, inasmuch as a very great number of people are ignorant, indifferent, or directly opposed to vaccination, even in the face of abundant clinical evidence, scientific research and statistics testifying to its efficacy as the means par excellence in the prevention of smallpox; others claiming they would rather have smallpox than be vaccinated, this latter class using the untrue statement that more people die from vaccination than from smallpox, and, when once contracted, the majority of the above class pay but little attention to quarantine, going about their ordinary duties, sending their children to school, mingling with their fellowmen in public places, on railroad trains, etc. It is this mild epidemic, the importance of which an early diagnosis of a case and the prompt and efficient measures adopted to limit its spread and protect others, that the writer has in mind in writing this article. However, I would not lose sight of the fact that not all persons contracting the disease have it in such a mild form, for a very considerable number have succumbed to smallpox each year in the United States since the beginning of the mild epidemic, which has existed in different sections of our country since its first appearance in Alabama and Tennessee in 1897.

The above statement may be borne out fully if anyone will take the trouble to look up the vital statistics on this point. The city of Cleveland, during an administration of anti-vaccinationists who claimed that thorough disinfection was all that was necessary to stamp out the disease, had an epidemic during which some twelve hundred persons suffered from the disease, and over two hundred deaths resulted. Seeing that the disease was not being controlled in this way, a most vigorous crusade was inaugurated, in which vaccination and revaccination was made the main weapon of defense, with the result that the disease was soon under control, and finally entirely wiped out. This affords another dearly learned lesson of the efficacy of the foremost method in the prevention and control of this formidable trouble.

The death rate from smallpox in the state of New York during the month of June, 1901, was the highest ever recorded for any one month in the history of the state. The tendency of the disease seems to be toward a change in type to the more severe forms of the disease, and the sooner the laity awaken to the necessity of this prophylactic measure, viz.: vaccination, as the means of stamping it out; and act in accordance with such realization, just so soon will we get rid of it. Let us look for a few moments at some comparisons and facts concerning vaccination, and, after doing so, draw our own conclusions.

VACCINATION AS A PREVENTIVE

Vaccination was made obligatory in the German army in 1834, and among all classes of the community in 1874. The effect was at once seen in the mortality from smallpox, which was almost eradicated in the first instance and very greatly reduced in the second. In 1870-71, during the Franco-Prussian war, the two peoples inter-penetrated each other, the German having its civil population vaccinated optionally, but its army completely vaccinated, while the French (population and army alike) were vaccinated perfunctorily. Both were attacked by smallpox. The French army numbered 2,200 deaths by it, while the German army had only 278, and in the same tent, breathing the same air, the French wounded were heavily visited by the disease, while the German wounded, having been vaccinated, had not a single case. From 1875 to 1887 one death occurred from smallpox in the German army, and this in a soldier who had been revaccinated unsuccessfully; while in the French army from 1875 to 1886 there were 550 deaths from the same cause. In France, in 1896, the disease was 1,176 times as great as that of Germany for the same year, notwithstanding the contiguity of the two countries. The comparative immunity of the entire German nation from smallpox, at the present day, is due solely to vaccination.

Attempt has been made by those who oppose vaccination to minimize the value of these remarkable figures by attributing the diminished death rate and comparative absence of the disease in the German army and in Germany, as in Sweden, to the improved sanitary conditions. This argument is absurd. There was no sudden movement in sanitary conditions in either Sweden or Germany, and neither country was more

sanitary than others with which comparisons have been made. Furthermore, during the Franco-Prussian war the German soldiers suffered and died from such infectious diseases as dysentery and typhoid fever, not only in like, but often in greater numbers than the French troops. If the "improved sanitary conditions" referred to existed in the German army, the spread of these infectious diseases would have been prevented also.

The futility of placing sole dependence on isolation and cleanliness, as a means of quelling an epidemic of smallpox, was conclusively shown in Gloucester, England, the former center of the anti-vaccination propaganda, during the epidemic in that city in 1895 and 1896. Among a population of 42,000 there occurred 1,979 cases of smallpox, 439 of which proved fatal. The strongest efforts were put forth to check the spread of the disease by disinfection and quarantine, but without avail. The epidemic raged until vaccination was enforced, when it rapidly subsided. As elsewhere, those who were loudest in decrying the influence of vaccination were among the first to avail themselves of its benefits as soon as it became evident that the plague could not be quelled by any other means.

In an epidemic of smallpox in Birmingham, Ala., in 1897 and 1898, investigated by the United States Marine Hospital service, 225 cases were treated, of which 219 were in colored persons and 6 in white. Of the whole number 106 had never been vaccinated, and 101 unsuccessfully; two presented good scars, five doubtful ones, and seven had been recently vaccinated.

At the Philadelphia Municipal Hospital for infectious diseases 300 cases of smallpox were treated between January 1 and December 1, 1901. Out of this number not a single patient had been successfully vaccinated. In St. Paul, between May 1, 1899, and May 10, 1901, there were 104 cases of smallpox. Of these but two had ever been vaccinated, one fifteen and one twenty years before.

The vaccinal status of 346 cases of smallpox, treated in the Isolation Hospital at Chicago between February 14, 1899, and December 1, 1901, was as follows: Five patients had typical old scars. The date of vaccination ranged from 16 to 50 years previous to the attack. Nine had fair old scars, and twenty-six had old, imperfect, doubtful scars. Three hundred and six had never been successfully vaccinated. All patients were carefully examined by experienced physicians for evidence of vaccination, and the record here given, which is furnished by the chief medical inspector of the Chicago Health Department, can be relied upon as correct.

Statistics of the smallpox epidemic in Illinois during 1901 and 1902 furnish indisputable evidence of the beneficial influence of vaccination. During the period from October 1, 1901, to March 1, 1902, there were reported to the State Board of Health 5,000 cases of this disease among a population of 5,000,000 people. In the city of Chicago, among an estimated population of 2,000,000 people, only 66 cases were found during the period mentioned. Chicago is known to be one of the best vaccinated

cities in the United States. The inference is plain. Of these 66 cases, 23 occurred in the persons of patients coming from surrounding municipalities and states; twenty-six cases were traced directly to those imported, or to some known case outside of Chicago. The source of contagion of the remaining 17 is unknown, but is supposed to be due to importation. There was no smallpox in the city of Chicago between August 12th and November 12, 1901. In many other cities and villages, in which vaccination had been observed, there was an entire absence of the disease among the inhabitants, although in some instances smallpox prevailed in adjoining districts.

DURATION OF IMMUNITY FROM VACCINATION

Facts of the above character could be quoted in several additional pages, but it is believed that no further demonstration of the preventive potency of vaccination is necessary. The question is very often asked: How long does vaccination protect the individual against smallpox? A vaccination is probably protective as long as it is protective against itself. The immunity conferred by vaccination has its limits, as sometimes has that conferred by smallpox itself. Few persons are insusceptible to revaccination after the lapse of ten or twelve years following a primary vaccination. Many are susceptible after five years. But, in the words of the Berlin board of health, which assuredly can speak with authority: "Vaccination in infancy, renewed at the end of childhood, renders an individual practically as safe from death from smallpox as if that disease had been survived in childhood, and almost as safe from an attack. A *recent successful* vaccination is a positive protection against an attack."

VACCINATION—HOW AND BY WHOM PERFORMED

Upon the first appearance of a case of smallpox in a given locality, systematic vaccination or re-vaccination should at once be resorted to—vaccination of all not previously protected, and re-vaccination in all cases where the operation had not been successfully performed within the preceding twelve months. It is not prudent to rely on an old vaccination, no matter how typical the scar may be. The inconvenience of vaccination is trifling compared with an attack of smallpox. If it doesn't "take" one may be assured of safety if exposed, provided the operation has been properly performed, and the virus new and of good quality. If it does "take" it is conclusive evidence that the individual was in a condition to have contracted smallpox if exposed.

Vaccination should, in all cases, be performed by a legally qualified physician, and too much care cannot be exercised in the selection of virus and the performance of the operation. There are many spurious vaccinations. These are worse than none, because they give false sense of security, and when they fail to afford the protection expected of them they not only imperil the lives of the subjects, but bring an unjust odium upon the practice. Trivial and simple as the operation appears, it never-

theless is one requiring skill and special knowledge to secure special results. It is not only foolish, but a dangerous economy to intrust this responsible duty to persons having no knowledge of the phenomena of vaccination.

No harm can result from vaccination with reliable vaccine, properly performed by a qualified physician. Much harm can, and in all probability will, result if the vaccination be performed by a person ignorant of the technique of the operation, who vaccinates (?) any individual presented, without proper examination as to fitness or physical condition, by merely abrading, scarifying or puncturing the skin, which may or may not be clean, and rubbing in the virus, and fails to give proper directions regarding the care of the wound. I have vaccinated many individuals, adults and children; I have vaccinated myself a number of times during the past ten years, and I have never observed any serious results from the operation, and have seen but very few "bad arms." I have been wholly unable to find, in authentic literature, any record of serious results from vaccination alone, and do not believe that a permanent injury has ever been caused by vaccination with reliable vaccine, performed by a competent physician. To dirt, not to impure vaccine, may be attributed the greater number of serious results which have followed vaccination during recent years.

Too little care is taken by the ordinary person after vaccination to protect the vaccinated areas against infection. In fact, vaccination is too often regarded as an operation without danger, and in consequence, dirty clothing is allowed to come in contact with the sore, which is often handled with dirty hands, and scratched with dirtier finger nails. Under such conditions it is remarkable that serious results do not follow oftener than they do. The wound made to receive the vaccine matter must be kept protected and clean.

VACCINATION AND TETANUS

An unusual number of cases of tetanus were reported in Camden, N. J., during November, 1901, and several deaths occurred. Unfortunately the majority of persons attacked had recently been vaccinated, and although the disease developed in persons who had not been vaccinated, the epidemic was attributed to vaccination. The connection between the process of vaccination and the attack of tetanus, as cause and effect, has not in a single instance been established. On the contrary, a commission of experts, appointed by the Camden board of health to make a thorough investigation of the epidemic, has demonstrated that not one case of tetanus was caused by vaccination. An epidemic of tetanus prevailed in other parts of New Jersey in November. The atmosphere, soil and dust were impregnated with the fatal germ; hence it was possible that any one who had a wound, a mere scratch, or even an abrasion of the skin from a bruise, might be attacked unless the proper precautions were taken to prevent it.

A COMMENDABLE CREED

During the prevalence in Camden over 70,000 vaccinations were performed in Philadelphia and its suburbs. Not a single case of tetanus resulted from any of these vaccinations. Chicago, which is one of the best vaccinated cities in this country, has a health department that has for its creed concerning vaccination the following: "We, the undersigned, hereby publicly profess our firm belief, based on positive knowledge gained through years of personal experience and study of smallpox and vaccination:

"First.—That true vaccination, repeated until it no longer 'takes' *always prevents smallpox*. NOTHING ELSE DOES.

"Second.—That true vaccination, that is, vaccination properly done on a *clean* arm, with *pure lymph*, and kept perfectly *clean* and unbroken afterwards, never *did* and never *will* make a serious sore.

"Third.—That such a vaccination leaves a characteristic scar, unlike that from any other cause, which is recognizable during life, and is the only conclusive evidence of a successful vaccination.

"Fourth.—That no untoward results ever follow such vaccination; on the other hand, thousands of lives are annually sacrificed through its neglect, a neglect begotten of a lack of knowledge.

"ARTHUR R. REYNOLDS, M. D.,

"Commissioner of Health, City of Chicago.

"HERMAN SPAULDING, M. D.,

"Chief Medical Inspector, Department of Health.

"December, 1901."

As above stated, the number of smallpox cases in the city of Chicago, as compared with the number outside, and in the state of Illinois, show without mistake the protection that vaccination gives against smallpox. It is a higher and more exacting task to prevent than to cure; but it is a task often thankless and unrewarded.

The cause of smallpox is, no doubt, some infectious micro-organism, which, as far as I know, is not fully understood; the infection being capable of producing any of the various forms of the disease according to the susceptibility and condition of the person infected. Age cannot be said to affect the susceptibility to smallpox, while nursing children under six months commonly resist the infection of scarlet fever and measles; they are almost certain, if not immune, to contract smallpox if exposed. The same may be said of varicella or chicken pox, with which smallpox has been so frequently confounded during the epidemic of the past four or five years. Sex does not influence the predisposition to the disease.

THE TAMA INDIANS

There is a difference of opinion as to whether race has any predisposing influence, but most authorities, I believe, agree that the predisposition is greater among the dark-skinned races, and that among these it is more fatal. This was certainly demonstrated during our Iowa epidemic among the Tama county Indians. This I believe to be due:—

First.—And of most importance—to the neglect of vaccination, not only in the present age, but in ages past, and a consequent lack of a certain degree of transmitted immunity by past generations.

Second.—The unsanitary conditions usually prevalent in the homes and colonies of these individuals.

Third.—To the lack of medical attendance, and nursing generally secured by the white race.

The following from the *Iowa Health Bulletin* will illustrate these points:

"Dr. A. M. Linn, of the State Board of Health, was called to Toledo a short time since by the United States Indian agent because of the outbreak of smallpox on the Indian reservation. We present herewith his report. It will be noticed that the rate of mortality is high. It is said that the attack of the same disease among the Winnebagos, in Nebraska near Sioux City, is also attended by a high rate of mortality. The disease in no respect differs from the eruptive affection so prevalent all over the state except in the character of its victims. Indians do not have the inherited immunity that comes from generations of vaccinated ancestors. We firmly believe the cause of the mild type of smallpox as seen so generally is because of the heritage bestowed by the vaccination of parents or grandparents. There could hardly be a more striking illustration of our belief as above expressed than is afforded by the presence of smallpox among the unvaccinated races.

William G. Malin, United States Indian Agent, Toledo, Iowa:

My Dear Sir,—In compliance with your request to Secretary Kennedy of the State Board of Health (referred to me because of your location in this health district), and also in response to your telegram to me, I visited the Indian reservation under your charge.

In company with Dr. Carpenter of Toledo and Dr. Thompson of Tama we carefully inspected a portion of the reservation, enough of it to learn definitely of the situation, and to be able to report upon the same.

The Indians upon the reservation are at this time afflicted with smallpox. It was reported to us from a trustworthy Indian that five of the tribe had died thereof, one of the victims being the wife of our informant. In his own house four others were ill with smallpox in various stages. One of these will probably die. The daughter-in-law, not confined to the house, has the affection in a very mild form, and two of the sons have recovered from the disease.

In another part of the reservation we found two young men who had the disease in a very mild form. Then several cases which had been seen on the previous day by my companions could not be found. They had been secreted and all inquiry as to their location failed to elicit any knowledge of them. With careful cunning they all professed to be ignorant of their hiding place.

It is wholly impossible at this time to state the number of victims affected. Save such as are immune or will consent to be vaccinated it is

probable nearly all will contract the disease. Enough was elicited from them to know that they object to being vaccinated. It is indeed a matter of doubt whether they can be compelled to submit. Our state courts have held against compulsory vaccination. What the government regulations may be I cannot state. As the state and local boards cannot quarantine them, and the government supplies no funds for such purpose, your only recourse is to quarantine against them. To make such a quarantine effective the various health boards surrounding the reservation must act in harmony and unison. By so doing an effective quarantine may be maintained against them until by means of vaccination and the run of the contagion it will expend itself. This will doubtless be at the cost of numerous lives among them.

When the epidemic is passed I would urgently recommend that every vestige of clothing be burned and every house be reduced to ashes, and all dogs killed. It would be infinitely more safe if the government will consent to issue new clothing and provide lumber for new residences. Otherwise outbreaks of smallpox may be expected from time to time, as others from different agencies and curious whites visit them. The situation is a perplexing one to meet, because of the lack of application of our state laws, and of the lack of jurisdiction of our State Board of Health. As, however, the maintenance of the public health is of paramount importance, we promise you the active assistance of the state health authorities in every needed measure to stamp out the disease.

Most respectfully yours,

A. M. LINN.

SYMPTOMS

There are rarely any symptoms manifest during the first or incubation stage, which does not vary much from ten to twelve days. The period cannot be accurately determined, only when there is known to have been one exposure. The last few days of the incubation period the patient may complain of some headache and backache, possibly some gastric disturbances, and present an anaemic appearance, when suddenly the symptoms of smallpox appear and usher in what is called the

INITIAL STAGE

The first symptoms of which is a chill more or less severe, or more often repeated rigors, usually followed by, or associated with, high fever. The rigors and fever may, in some instances, be very slight—in fact, so slight that the former may pass by unnoticed. The fever, however, is a very constant symptom and rises more rapidly in this than most any other disease, often rising on the first day to 103 or 104 degrees Fahrenheit. The fever continues, with slight morning remissions, until the eruption makes its appearance. Pain in the back and headache are almost constant symptoms in this stage. Irritability of the stomach is also quite a constant symptom of this stage, and in the hemorrhagic variety continues after the eruption appears.

The headache and backache, along with the other symptoms of this stage, usually disappear when the eruption makes its appearance. Sometimes the fever continues for two or three days afterwards, but that, too, falls considerably, and in not a few cases drops to the normal, or nearly so, when eruption makes its appearance, which is usually on the third or fourth day of the stage of invasion, or initial stage.

ERUPTIVE STAGE

The eruption makes its appearance almost always on the forehead and temples and on the wrists first. It rapidly spreads to the face, neck, ears, hands and forearms, and appearing last on the parts not so much exposed to the atmosphere. Usually within twenty-four hours the eruption has spread to all parts of the body. However, the eruptions continue to multiply for two or three days after making its appearance.

The development of the eruption is as gradual as is its appearance. It usually appears as minute red points; these gradually increase in size and number until, within twenty-four hours after their first appearance, they assume the form of elevated papules indurated, and convey to the sense of touch a feeling not unlike that of fine shot beneath the skin. About the third day after making their appearance these papules will be seen to contain a little clear serum, and by the fourth or fifth day they will be transformed into what writers on the subject choose to call vesicles, and contain a cloudy, milky substance. These vesicles continue to enlarge, reaching their maximum size about the eighth or ninth day. As soon as the vesicles form there may be seen in a great many of them a central depression called umbilication. This symptom is very diagnostic when seen, but in very many of the cases in the recent epidemic was not observed, and especially was this so in the milder cases of the type.

SUPPURATIVE STAGE

These milky vesicles gradually grow more and more turbid, filling with pus corpuscles, until about the sixth day of the eruption, or ninth day of the disease, when the vesicle's contents become distinctly purulent and marks the beginning of the suppurative stage. The pustules, whether the vesicle from which it was developed *ever assumed the umbilicated appearance* or not, becomes large and globular, and the skin immediately surrounding them presents a broader and more deeply inflamed appearance. The pustules develop in the same order in which the eruption made its appearance. Usually about the eighth or ninth day of the eruption the pustules have reached their full development and begin to shrink and contents become more yellow, and the stage of pustulation is merged into the stage of desiccation. This begins earlier on the face, as do the other stages, and has usually reached this stage on that part of the body about the eleventh or twelfth day of the eruption. All the symptoms abate at this time, even in severer cases, if the case is pursuing a favorable course. During this

stage the pustules begin to dry, a yellowish exudate is thrown out on their surface and dry altogether, forming thick brownish or almost black scabs. This process is often accompanied by an almost intolerable itching, which takes the place of pain during the formation and development of the pustules. This pain is greater in the pustules, occurring on the soles of the feet and in the palms of the hands.

DURATION OF THE DISEASE

In regular cases of variola vera it usually requires from two to four weeks after the scabs begin to form for desiccation to be complete. The more mild the case the shorter the duration of the various stages of the disease, so that in some very mild cases the time from the eruption beginning until complete desiccation has occurred may not exceed 25 or 30 days. When the scab falls off there still remains a purplish or red spot which does not disappear for some weeks afterward. In very severe cases, and especially if the eruption has been very profuse on the scalp, the hair falls out, but is most always restored again.

In giving a description of smallpox it has been my purpose to describe as nearly as possible the typical forms of variola vera. There is nothing during the initial stage of smallpox enabling us to determine with any degree of certainty that a given case will be one form or the other. However, in the severer forms the symptoms of the initial stage are almost always intensified.

DIFFERENTIAL—DIAGNOSIS

An early diagnosis is a very important thing in this disease, as well as all contagious and communicable diseases. It is no doubt contagious even in the initial stage. The history of an exposure would be of valuable aid in the prevalence of smallpox in the community, and should put the physician on his guard. The method of diagnosis by exclusion is valuable in this stage. Pneumonia usually begins with a chill, followed by fever, but the physical signs will be such as to exclude pneumonia.

In typhoid the gradual rise of the temperature with the enteric symptoms will exclude this disease. In scarlet fever the onset is sudden, distinct chill, followed by high fever. The fever continues after the rash appears. The rash is uniformly diffused, and the throat symptoms, in scarlet fever, will usually distinguish it from smallpox. In malignant scarlet fever, however, the differential diagnosis will be difficult to make until the characteristic rash of variola makes its appearance. When the eruption of variola first makes its appearance it may be mistaken for measles; the catarrhal symptoms, the continuance of fever after the appearance of the eruption, the eruption appearing on the back and chest quite as early as on the face and wrist.

The maculae of measles being much larger than the papulae of smallpox, the contents of the maculae of measles being velvety, while the papulae of smallpox are hard and convey to the sense of touch the re-

semblance of small shot beneath the skin, will distinguish measles from smallpox.

Dry rash, and some diseases of the skin of a vesicular or pustular nature, may be mistaken for smallpox, and vice versa. In our late epidemic more often vice versa. A thorough understanding of the course of development and peculiar features of the various eruptions should guard the physician against any errors of this kind.

There is no disease which has, I believe, been so often confounded with smallpox during our Iowa epidemic, and perhaps during the mild epidemic in other states, as has varicella, or chicken pox. Chicken pox is much milder than smallpox, in any of its forms, except, perhaps, some cases of the discreet form and varioloid; but even in these forms there are certain characteristic marks of difference that should render a diagnosis easy after a few days, and until that time, if a diagnosis is demanded, it would be far better for the community, both from a sanitary and financial standpoint, to err on the side of safety and make it a diagnosis of probable smallpox until such time as a positive diagnosis could be made. Our Iowa State Board of Health has recently added chicken pox to the list of quarantinable diseases, at least to the class of contagious diseases which shall be reported to the health officer, who shall placard the premises with the sign "Chicken-Pox," the sick being isolated until complete recovery of the patient, and thorough disinfection of his person and of the premises. The common diagnosis, either intentional or otherwise, of chicken-pox for smallpox, rendered this necessary as a preventive measure to the spread of the disease, smallpox.

In making a diagnosis between the two it is very important to note the behavior of the fever. In the former the temperature rises suddenly, and continues until the eruption has fully made its appearance, when it suddenly falls to normal, or nearly so. In the latter the fever does not make its appearance until the advent of the eruption. The secondary fever, so much talked of as a symptom of smallpox, while it is always present in the severer form of the disease, it is almost always absent, at most only an elevation, in the modified form. It frequently happens that there is no initial chill or fever in the modified form of smallpox, as well as in chicken-pox, but then there are certain distinctions manifest in the eruption itself which distinguish one from the other, viz: the eruption of smallpox first appears in the form of papules which are slowly transformed into vesicles, and then in pustules. The papules are hard, and to the sense of touch convey a shot-like appearance beneath the skin. They are more abundant in the exposed surface of the skin, and usually begin on the face and wrist, spreading to the back, hands, arms and lower extremities with a decided degree of regularity. While they spread and develop slowly they do not break out in successive crops; they do not increase in size by peripheral extension. It requires from eight to twelve days for eruption to pass through its various stages up to the stage of desiccation. The scab is more dense, thicker, darker, more deep seated, and requires from the beginning until the completion of the stage of

desiccation from ten days to three weeks, while in chicken-pox the eruption first appears in distinct vesicles containing clear serum. They are usually first seen in great numbers on portions of the body covered by clothing, and in the cases I have seen especially on abdomen, inner surfaces of the thighs and on the back, but scarcely ever on the palms of the hands and soles of the feet. They make their appearance in successive crops, and vary greatly in size, their edges being irregular and not presenting the induration that the smallpox vesicles do.

Their covering is very delicate and easily broken down. They run their course in from two to four days, and form their brown scabs, which readily fall off, so that by the end of eight to ten days from the beginning of the disease desiccation is complete, and the underlying skin soon assumes its natural color; whereas, the desiccation from smallpox leaves a red or purplish spot, which does not fade for several months.

Impetigo contagiosa may be distinguished by the suddenness with which the vesicle or watery heads makes their appearance, by their superficial and enlarging by lateral extension. They are the result of infection from pus organism, and is properly termed by some writers a "finger nail filth" disease of early life. The crusts are friable and readily removed, being very superficially attached, and are never implanted on a small base as are smallpox crusts. Many names have been given to our present epidemic of smallpox, among which may be mentioned "Cuban itch," "Manila itch," "Filipino itch" and "yaws." I presume no one will doubt but what the Cubans and the Filipinos as well as Americans have the itch, but to confound it with smallpox is a mistake that no intelligent physician, even without experience in diagnosing either itch or smallpox, will conscientiously make. As for "yaws," such a disease is spoken of in some text-books, but it is not a common disease in the United States, and should no more readily be confounded with smallpox than should syphilis. It is a disease said by some to be syphilitic; by others idiopathic. It is characterized by the development of mulberry-like excrescences, and when the outgrowths proliferate rapidly their epidermis is detached as a dirty detritus, or is cast off by the formation of vesicles.

PREVENTION, RESTRICTION AND SUPPRESSION

Of all the preventable diseases smallpox is the one over which we should have the most complete control—vaccination and re-vaccination being the remedy, proof of which has already been given in this article. The disease never has and never will spread in a well vaccinated community or country. The prompt vaccination of persons exposed to smallpox will invariably avert an attack. Even if performed as late as the fourth or fifth day after exposure the disease will be so modified that the symptoms of the various stages will not only be much more mild, but will be of shorter duration, if it should be contracted.

The contagion of smallpox may be communicated from one person to another by actual contact, or it may be carried through the air of a room, or from place to place in clothing, merchandise or any other in-

fectured articles. The contagion also exists in the secretions and excretions of the body, and in the exhalation from the lungs and skin.

Books, toys and other articles used to amuse convalescent patients should be burned. No inmate of the house should be allowed to leave until permission has been given by the health authorities. Letters must not be sent from the patient, and mail from the house should be subjected to a dry heat of from 250 to 260 degrees Fahrenheit. Dogs and cats should not be permitted to enter a house in which there are persons suffering from the disease. The physician should be very careful that he is not the means of conveying the disease from one to another; an outer garment completely covering his ordinary wearing apparel, head, face, hands and shoes should be put on before entering the house of a smallpox patient, and removed on coming out. In addition to these precautions he should wash his hands and face in a one to 1,000 bichloride solution, and brush his hair and clothes with a brush dipped in the same solution before leaving the premises.

The premises should be quarantined immediately upon the recognition of the disease, and in suspicious cases, before the eruption makes its appearance, temporary quarantine should be established until it becomes possible to make a positive diagnosis. The patient should occupy a room in the upper story, all persons excluded except the nurse and physicians until after complete recovery, i. e., after the scabs have all fallen off and the skin becomes perfectly smooth.

The patient, before being released, should have daily baths for four or five days, followed by thorough rubbing of the skin with pure vaseline; and just before he is discharged he should have a full and thorough bath with bichloride solution one to 3,000, and have clean underclothing that has been disinfected by formaldehyde gas and aired in the sunlight. All other persons occupying the house should have the full bath and as thoroughly sterile clothing as the patient who has recovered, before being released from quarantine. After this has been done the attention should next be directed to the disinfection of the house and contents. This should commence with the beginning of the disease, the object of disinfection being the destruction of the germs attached to clothing, carpets and other articles as well as that deposited as dust upon windows, etc.

A great obstacle to the thorough performance of this would be accomplished if all carpets, curtains, rugs, unnecessary bedding, furniture and pictures were removed before being occupied by the sick person. Efficient disinfection will be further rendered easier if the room had been thoroughly cleaned and ventilated during its occupancy by the sick person. This may be efficiently done by the frequent wiping of window casings, side wall, ceiling and floor of the sick room with cloths saturated with bichloride solution one to 1,000. All excretions should be well disinfected and emptied into a hole dug for that purpose, a little fresh dirt being used each time to cover the excretions thus emptied.

Formaldehyde gas, properly used, and in efficient quantities, has been shown to be an efficient disinfectant, but can only be depended on to disinfect the *surface* of things. All clothing, carpets, curtains, etc., that

cannot be boiled should be burned. The room should then be closed as nearly air tight as possible by pasting paper over keyholes and other openings into it, chinking the cracks around windows and doors, and not less than ten ounces of a forty per cent formaldehyde solution to every 1,000 cubic feet of space should be generated as quickly as possible into gas in the room. The doors and windows should remain closed for ten or twelve hours, then thoroughly ventilated. All wood work and floors being washed in sublimate solution, as well as the bedstead, chairs and other articles of wood which have been in the room. The side walls and ceiling should then be re-papered.

When measures along these lines become general and thorough throughout our United States we will *get and keep* rid of this often loathesome and formidable disease. And it seems to me that while we may not wish to pattern after some of our sister countries in the enactment of laws governing our people in a great many respects, yet the enactment and enforcement of a vaccination law similar to that governing some of these countries would be a sanitary measure, the force of which would eradicate forever this disease, smallpox.

XVII

THE MANAGEMENT OF OUTBREAKS OF SMALLPOX, DIPHThERIA AND SCARLET FEVER*

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GENTLEMEN:—I have been assigned the duty of addressing you upon the subject of "The Management of Outbreaks of Smallpox, Diphtheria, and Scarlet Fever" from the standpoint of the municipal, local and rural health officer, a subject full of importance and pregnant with the most vital interests of the community in which you live.

SMALLPOX

Without further preliminaries I would beg to enter at once upon the subject of smallpox, and in considering its management I beg to consider not only the management of epidemics when they have once made their appearance, but the prophylaxis or prevention of such outbreaks.

Prevention—In all communicable diseases there are various means at our disposal for the control and prevention of their spread. Such, certainly, is the case with smallpox; but I think it admits of no argument that were we limited to one method for the prevention of the spread of smallpox that method would be vaccination.

Into the subject of vaccination it is hardly necessary to go before an audience of this character. What the nature of vaccinia is—whether vaccinia is smallpox in the heifer—may be subjects full of interest, but I do not consider that their discussion, however important, properly belongs to an occasion like this. Much prejudice in the past has existed against vaccination, which *might* possibly have been justified in the days of arm-to-arm vaccination or vaccination from the scab. I can conceive that it is possible that certain constitutional diseases, viz, tuberculosis or syphilis, might be conveyed by these processes; but practiced as vaccination is to-day, with bovine lymph, and that lymph largely purified of

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extraneous organisms and contaminations by the process of glycerination, such untoward results are now of infrequent occurrence, and it is high time, in this third year of the twentieth century, that the prejudices against this most valuable prophylactic should disappear with the advance of education and intelligence. Of course, it is essential that vaccination should be carefully performed. The arm—or leg, in the case of females—upon which vaccination is practiced should be cleansed by soap and water, followed by alcohol. The scarification should not be large; a spot of one-eighth inch in diameter is sufficient. The vaccine should be glycerinized, and care should be taken to prevent its contamination. As soon as the lymph has dried some light protective dressing should be employed to prevent contamination of the area by pus organisms, either rubbed in by the fingers or the dress from the surrounding area.

Having placed vaccination thus in the first place of importance for the prevention of smallpox, it might well be asked what measure takes the next place in importance in the prevention of this disease. I answer, after mature deliberation and consideration and hope that it will meet with your approbation, that thorough, early, diagnosis in my opinion easily takes the place of next importance.

Diagnosis—Smallpox may be mistaken for several other conditions, viz., measles, scarlet fever, chicken pox, syphilis, or *impetigo contagiosa*.

A few words as to the differential diagnosis of these maladies will not be out of place.

In *measles* the period of incubation is a little longer than in smallpox (about fourteen days). The stage of invasion resembles an ordinary cold, attended with shivering, not often with definite chills, sneezing, injection of the eyes, running of the nose, and a more or less severe cough. The eruption makes its appearance upon the fourth or fifth day, and the condition of the patient is not materially improved with the appearance of the eruption. By the sixth day the eruption is well developed and gradually fades, though coming out in successive crops. There is no secondary fever with the appearance of the eruption.

In *scarlet fever* the incubation is much shorter, ranging probably as high as seven days, about four days on an average, and the period of invasion is attended with high temperature and more or less sore throat, generally a very considerable sore throat. The eruption appears on the second day and is in the form of a bright red scarlet rash in which there are spots more or less deep mottling, giving a particularly red appearance, with marble streakings. The tongue has a strawberry or raspberry appearance, owing to the projection of the papillæ of the tongue. Albuminuria is a frequent complication of scarlet fever.

Chicken pox or *varicella* might be strictly called a disease of children, though it sometimes occurs in adults. The period of incubation is rather long. The initial symptoms are somewhat mild and frequently attract little attention, though there may be fever, vomiting, and pain in the back and limbs. The eruption appears within the first twenty-four hours, being first papules, which in a few hours change to pustules filled with a

gray though generally turbid fluid. In three or four days the eruption dries up and forms scales which fall off, and the scarring, if any, is very superficial. It is to be noted that the scabs of chicken pox are generally bloody in character. It is possible that varioloid may be mistaken for chicken pox.

Impetigo contagiosa in outward appearance approaches nearer to chicken pox than smallpox. The eruption is without constitutional symptoms and occurs in groups or patches. The patches coalesce and as desiccation takes place large crusted patches are formed.

Syphilis in some of its protean aspects resembles smallpox. In this disease we must be guided by the *history of the case, which is the strongest point of differentiation*, though the absence or very slight character of the fever and other constitutional symptoms aid us in making a differential diagnosis.

I pass over typhus fever, glanders, the first stages of typhoid fever, and other diseases without more than mentioning them, and make no attempt to draw a strict differential diagnosis. A brief review now of the symptoms of smallpox may be of interest.

Smallpox may appear in any form, from the mild varioloid, which is smallpox modified by vaccination, up to the hemorrhagic form. The forms as usually described are *variola vera* or true smallpox, the discrete form, the confluent, and the hemorrhagic form, which may occur as the purpuric form and a hemorrhagic form, in which hemorrhage takes places into the pocks or from the mucous membrane.

The invasion of smallpox begins suddenly, and is usually ushered in with a chill. It may or may not be followed, but usually is attended, by severe aching in the small of the back and limbs, sometimes with intense headache, always with vomiting and with a fever reaching 103 degrees to 104 degrees F. The pulse is rapid and strong. Convulsions may occur in children. There is an initial rash, which usually appears on the second day, in the form of a definite redness. According to Osler, in about 13 per cent of the cases there is an initial rash on the inner surface of the thighs, the lateral surfaces of the thorax, the lower part of the abdomen, and occasionally on the anterior surface of the knees and the inner surface of the elbows.

In the discrete form of smallpox the eruption usually appears on the third day at the margin of the hairy scalp, around the mouth, and on the wrists. At this point, to be thoroughly noted, the temperature, which up to this time has been high, falls to nearly normal. Within twenty-four hours the eruption becomes general over the body, and at this stage of the disease there is a strong resemblance to measles. On about the fourth or fifth day of the disease the eruption becomes papular, and there is noted by passing the fingers over the surface a shotty sensation, viz, as if small shot were imbedded under the skin. About the sixth day these papules become vesicles, which vesicles change to pustules. The stage of pustulation is attended with a sinking in the center of the pustules, or umbilication, and each pustule is surrounded by a red border. This ushers in the stage of suppuration and the secondary fever comes.

on, the temperature rising again rapidly and being strictly a fever of suppuration. It is not infrequent that the eruption makes its appearance on the mucous membrane of the throat, fauces, and pharynx twenty-four hours before its appearance upon the cutaneous surface.

About the twelfth or thirteenth day of the disease the pustules begin to dry up and form scabs. These scabs fall off in the order of their appearance upon the body. The temperature falls, soon reaches normal, and convalescence begins.

In the confluent form the initial symptoms are more intense and the eruption may occur a little earlier. The papules are discrete, but the vesicles and pustules coalesce, especially upon the face, hands and feet, and there is, of course, a great deformation and swelling of the face, and there is swelling of the lymphatic glands, salivation, possibly diarrhea, and almost always acute albuminuria.

I feel that this description is brief to a point of meagerness, but it must be apparent to you that a week could be easily spent in a minute description of all the clinical features of smallpox, and even then leave the subject improperly described.

Vaccination—I have already gone into the technique of vaccination. Vaccination should begin naturally with the "contacts," or those who have been exposed directly to the infection from the first-declared case of smallpox. The area of vaccination should be greatly extended, and if the disease threatens to spread vaccination in a community should be general. The question may be pertinently asked, what should be the practice in regard to the repetition of vaccination. I think it admits of little doubt that the community should be vaccinated and revaccinated until everyone is either protected by vaccination or it has been demonstrated beyond peradventure that individuals are not susceptible to vaccination. There are quite a number in this latter class. In my personal experience I know of one who was vaccinated successfully in infancy, revaccinated at the age of eight; vaccination was unsuccessfully attempted again at the age of eleven, and since that time he has been vaccinated more than thirty times with only one rather imperfect "take." I have seen other instances equally conclusive. It is also reasonable to suppose that a person or persons susceptible to vaccination are to some extent susceptible to smallpox, though the course of smallpox will usually be modified even by one successful vaccination.

It would seem reasonable, therefore, that vaccination to be absolutely efficient should be repeated from time to time until a complete immunity against it is acquired. This, it is natural to suppose, would lead to an equally complete immunity against smallpox, though this remains to be demonstrated.

I do not propose, before this audience or at this time in the world's history, to defend the subject of vaccination. I confess it with shame that there are some, even in the medical profession, who cast discredit upon the efficiency of vaccination as a protective measure against smallpox. Is it surprising, then, that there should be a comparatively large number among the many millions of inhabitants of the United States

and of some other countries who doubt the expediency of the process and invoke law, sentiment and legislation to prevent the performance of compulsory vaccination?

Management—We now take up the consideration of the management of individual cases of smallpox from a point of view purely sanitary and prophylactic—that is to say, to prevent its spread.

I do not know what the law in all states is. I do not know whether under your law the health officer is authorized and empowered to remove every case of smallpox to a special contagious-disease hospital for treatment. Please note that I use the term "contagious-disease hospital." I protest with all my power against the term "pesthouse." Is it surprising that persons stricken with smallpox object to being removed to a "pesthouse?" The nature of the disease is sufficient in itself without the addition of this terribly sounding word, "pesthouse," by which it is assumed that the person who is being removed is loathsome, dangerous, and an object to be shunned alike by his friends and the general public. Certainly if the community is provided with a well-built, well-administered, comfortable, contagious-disease hospital the case of smallpox had better be removed there, but if this be not so, or if the objections of the patient's friends or family can not be overcome, or if he have law upon his side forbidding his removal otherwise than by his own free will and consent, it goes without saying that the case should be carefully isolated in his residence, preferably upon the upper floor, and that the floor of the house upon which the disease is to be treated should be abandoned by the rest of the family and placed in strict quarantine.

Sanitation and Disinfection—The room should be prepared by having all unnecessary furniture, curtains, hangings, or draperies removed. It should be upon the sunny side of the house and at the same time capable of being darkened, should be freely ventilated, and be maintained at an equable temperature. All bed linen, garments, handkerchiefs, towels, etc., worn or used by the patient and soiled by him should be immersed in a solution of carbolic acid, 5 per cent, or a solution of chlorinated lime, two ounces to the gallon of water, for one hour, and after this immersion they should be boiled and then laundered, aired and sun dried. The dishes, cups, medicine glasses, eating utensils, etc., used by the patient, should be immersed in actually boiling water. Food that has been in the sick room and which is not consumed should be burned, either in a stove in the room or, after being covered with a towel wet with one of the above germicidal solutions, should be removed from the room and burned in a stove or fireplace.

As I said before, the room, or preferably the floor, of the house should be in strict quarantine. The patient should be seen only by his attending physician and nurse. The nurse should wear easily washable garments, which should be treated in the same way as the bed and body linen of the patient. The physician after his visit should change his outer clothing before mingling with other patients or the public.

We will suppose that a case goes on to a favorable termination. What should be done upon its conclusion? It must be remembered that

smallpox is communicable so long as there are any scales about the patient, and even further—so long as there are any minute scales or epithelium desquamating from the bottom of the pocks or retained in the hairy scalp. The patient, therefore, after the stage of desquamation begins, should receive frequent mild antiseptic baths, paying especial attention to the hairy scalp, and should not be considered as safe until a careful examination of the pocks shows that the epithelium or skin at the bottom of the pocks is smooth and shows no tendency to desquamate. Special attention should be paid to the throat, mouth and nose of the patient. These should be washed or gargled with a mild antiseptic solution, and any towels or cloths which are used to receive the secretions of the mouth and nose had better at once be burned; it is useless to go to the trouble of disinfecting them, as is provided in the case of clothing, either bed or body.

These precautions having been observed, the patient being convalescent and the desquamation completed: what should be done with the room? The answer is, It should be completely disinfected.

The methods adopted for this disinfection will vary much with the circumstances. Provided that the room prior to being occupied by the smallpox patient has been stripped of all unnecessary furniture, hangings and draperies, much may be accomplished by washing the walls and floors of the apartment with water as near boiling as possible, to which has been added a liberal quantity of ordinary carbonate of soda, which should be used in the proportion of about half a pound to three gallons of water. All woodwork about the room and the bed, if a wooden one, should be washed with this solution. If the walls of the apartment are papered, this paper had better be torn down, the walls scraped, and the paper replaced with new after the apartment has been disinfected by burning sulphur in the room in the proportion of about three or four pounds per 1,000 cubic feet of space, care being taken to thoroughly close the room and render it as near air-tight as possible and at the same time to volatilize or evaporate water to the extent of half a pint at least per 1,000 cubic feet. This is necessary for the reason that sulphur burned in a dry atmosphere has very feeble germicidal properties, but when hydrated so as to form sulphurous acid (H_2SO_3) the germicidal effect is much increased, though the penetrating power of the gas is small. The mattress that has been used by the patient, if a cheap one, had better be burned, it being wrapped in a sheet wet with the carbolic or chlorinated lime solution before being carried out of the house. The burning should be accomplished under supervision, and should be absolute and thorough, because, if not, it may be removed by some careless or innocent person and the spread of the disease thus incurred.

Disposal of the Dead—It is a melancholy fact that while the mortality attendant upon smallpox has of recent years much diminished, our art, nevertheless, is sometimes impotent and death results. What should be the disposition of the remains? The body had better be wrapped without preliminary washing in a sheet, or two or three sheets, wet with a strong germicidal solution, such as carbolic acid, chloride of lime, or

bichloride of mercury 1:1,000, and be immediately placed in a metallic or other hermetically-sealed coffin. It goes without saying that there should be no attempt at a public funeral. Any funeral services held over the remains had better be conducted in private, and there should be the least possible exposure of persons and the things in the house to the patient or his attendant.

If it be possible, or the sentiment of the community or family be not opposed to it, cremation should be practiced. I am aware that this is fraught with many difficulties, but simply throw out the suggestion for what it is worth.

Epidemics—Now suppose that in spite of our efforts the disease spreads. What should be our course? If there are large numbers of patients, it will be most essential that a contagious-disease hospital should be opened in the community. This should be in an isolated spot, and should be maintained in absolute quarantine. The attending physician had better become a resident during the continuance of the epidemic. The nurses and other attendants about the hospital should be interdicted from passing beyond the quarantine limits, and any necessary supplies for the use of the hospital should be deposited at a safe distance and carried into the confines of the institution without any personal intercourse with the outside world.

Cases should be sought for; they should not be waited for to declare themselves. "Contacts" should be vaccinated and revaccinated, as already stated, and the vaccination and revaccination should be conjoined with a house-to-house inspection made at intervals corresponding to the period of the incubation of the disease, say every ten days.

This brings up the question, "What should be the treatment of 'contracts?'" My views on this question may be different from those held by some of you; but, believing as I do that smallpox is not communicable until the appearance at least of the preliminary rash, I should say that if it is possible to keep the contacts under observation they need not be quarantined after having been successfully vaccinated. Arrangements should be made for keeping them under observation from day to day, but until they manifest some initial symptom of the disease, as fever, chill, headache or backache, nausea or vomiting, it is not necessary, in my opinion, to quarantine them. Of course if a contact refuses vaccination that contact should be placed in strict quarantine during the incubative period of the disease, and, this passed, should he again refuse vaccination he should be kept under an observation which will insure him doing a minimum of damage to the community in which he is resident.

Additional Remarks on Disinfection—We have discussed, already, the disinfection and purification of the individual room in which a case of smallpox has occurred, but I feel that I would be derelict if I dismissed the subject of disinfection in this curt manner. Suppose that the disease has assumed an epidemic form in a community—that is to say, smallpox spreads and possibly the connection between cases is lost, viz, there is no definite history as to where the case under consideration acquired its infection—disinfection will then be required of, first, the

infected premises; second, the person and his belongings; third, disinfection of vehicles, such as railway coaches in which persons suffering with smallpox may have been conveyed; and fourth, possibly, the disinfection of merchandise shipped from a place in which smallpox prevails; and finally, and fifth, disinfection of mails.

In the Matter of Premises—On the removal of a patient from the house or apartment in which he has developed smallpox, it is always better to have the contents of the room remain *in situ* while a preliminary disinfection with sulphur or with formaldehyde gas is given. The object of this is to reduce to a minimum the danger in handling articles likely to convey infection preliminary to their final and complete sterilization. The room and its contents, as has already been said, may be disinfected with sulphur or formaldehyde gas, and the contents of the room, bedding, etc., by burning, by boiling, or by steaming in a special apparatus where facilities for these processes are available.

The formaldehyde may be applied in several ways, either by an apparatus producing formaldehyde direct by the partial oxidation of wood alcohol, by evolving the gas under pressure in an autoclave from one of its commercial solutions which are known as "formalin," "formol," "formolose," etc., or by sheets sprinkled with one of these solutions hung in the apartments to be disinfected, the room being tightly closed. For the production of formaldehyde gas from wood alcohol twenty-four ounces of wood alcohol should be oxidized for each 1,000 cubic feet of air space of the room. In using the autoclave ten ounces of formalin (40 per cent solution), to which has been added 20 per cent of a neutral salt, such as calcium chloride, borax, etc., should be used per 1,000 cubic feet. For the sheet or sprinkling method ten ounces per 1,000 cubic feet (40 per cent solution) should be sprinkled upon the sheet suspended in the apartment tightly closed. In using the sprinkling method it is essential that the sheets or cloths should not be wet or wrung out of the solution, but that the solution should be so sprinkled as to remain in small drops without coalescing, and thus furnish the largest space possible for evaporation.

I have mentioned sulphur dioxide and formaldehyde as disinfecting agents, and it might be well here briefly to discuss the limitations of each.

Sulphur dioxide is especially applicable to the holds of vessels, to freight cars, to apartments that may be tightly closed and which do not contain objects injured by the gas. It bleaches fabrics or materials dyed with vegetable or aniline colors. It destroys linen or cotton goods by rotting the fiber through the agency of the acids formed. It injures most metals.

On the contrary, formaldehyde gas has the advantage that it does not injure fabrics or colors, except, perhaps, the most delicate. It is not fatal, however, to the higher forms of animal life, though germicidal to the ordinary forms of bacteria, especially those of the non-spore-bearing varieties. It is effective in a minor degree against spore-bearing bacteria, such as anthrax, tetanus, etc. It is applicable to the disinfection of

rooms or clothing and fabrics. It is to be borne in mind that commercial solutions do not contain a full 40 per cent of formaldehyde gas, and that all of them are apt to deteriorate with time. A quantity in excess of the amounts prescribed should therefore be used in disinfection unless the full strength of the solution has been determined by recent reliable analysis.

A comparison of the three methods of using formaldehyde may be of interest. The lamp or generator is easy of application and requires no amount of mechanical skill. The apparatus is heated for one and one-half minutes by igniting the alcohol. The flame is extinguished and the oxidation of the alcohol then proceeds by means of the platinized surfaces contained in the lamp. The gas is produced regularly in a form very active and destructive to bacterial life, and is not prone to a change of form or polymerization. The process by this method requires six to eighteen hours' exposure, depending upon the size of the room and the nature of the contents. The sole disadvantage of the lamp is that the gas is produced rather slowly, but it leaves little or no odor when applied to clothing and textiles. The articles to be disinfected should be suspended in a tight room, and so disposed as to permit free access of the ther quantities of formaldehyd gas, which is irritating to the eyes and should not contain more than 5 per cent of acetone.

The autoclave process has the advantage that the gas is evolved rapidly, but the autoclave is in fact a steam boiler operating under considerable pressure, from forty-five to sixty pounds per square inch. It is somewhat liable to get out of order, requires a considerable degree of mechanical skill to operate it, and is prone to rapid deterioration. A further disadvantage of the process is that the gas evolved is exceedingly prone to polymerization into paraform or trioxymethylene, and this polymerized product, combined with the neutral salt, calcium chlorid, or borax, which it is necessary to use, leaves a disagreeable odor upon fabrics or garments submitted to its action. The paraform deposited has a tendency to volatilize upon every elevation of temperature, evolving further quantities of formaldehyd gas, which is irritating to the eyes and respiratory mucous membranes.

The limits of either of these processes as to size of rooms, buildings, or apartments to be disinfected have not yet been accurately worked out, though the matter will be taken up shortly; but it is known that for rooms such as are found in an ordinary dwelling house both methods are efficient, and experiments have shown that this efficiency extends to apartments of very considerable dimensions.

The spraying or sheet method of formaldehyd disinfection gives unequal results, and should only be used in the absence of the apparatus mentioned above.

We have already discussed disinfection of clothing, bedding and the articles used in the treatment of the sick. Where these are of value they should be boiled or steamed. When not of much value they had better be burned without further delay.

The dejecta of smallpox patients should be disinfected in carbolic acid solution, 5 per cent, tricresol, 1 per cent, or a solution of chloride

of lime, or milk of lime. If smallpox has declared itself in a person during transit on a railway or other public conveyance, no article used by him should be thrown away *en route*, but they should be gathered, kept as carefully as possible, and at the end of the journey be disinfected or burned. Railway coaches may be disinfected as well as sleeping cars by any of the methods given for the disinfection of rooms, but particularly by means of formaldehyde gas, using the generator for direct production of gas from wood alcohol, or the autoclave.

The disinfection of merchandise is seldom if ever required, as no merchandise is perhaps infected. Surface disinfection, at most, is all that would be required, and for this sulphur dioxide or formaldehyde by any of the methods given, is ample.

The mails emanating from an infected locality should be disinfected by formaldehyde or by sulphur dioxide methods for accomplishing which disinfections have been prescribed by the Post Office Department.

SCARLET FEVER

I am going to ask your permission to depart from the order of the caption laid down in my address and take up next the subject of scarlet fever, for the reason that in certain important particulars there is a strong analogy between smallpox and scarlet fever.

Beyond doubt smallpox is caused by a specific germ. Of the nature of that germ we are as yet uncertain in spite of the recent discoveries of Councilman, but in all probability it is a protozoön and not a bacterium. The same statement applies to scarlet fever. We do not know as yet the specific cause of scarlet fever, though it has been attributed both to protozoa and bacteria. Time will not permit that we should go into the consideration of scarlet fever with even that degree of minuteness with which we have treated smallpox, incomplete though that treatment has been.

Symptoms—Scarlet fever is a highly communicable disease. It is probably to be accepted as the type of a communicable disease, and the infection, using the term in its broadest sense, is, while not very resistant, quite long lived. It is usually a disease of childhood, though it may attack adults at any time of life. The reason for the communicability of scarlet fever is that it is a disease attended by very extensive desquamation, amounting in many instances to a complete peeling of the cutaneous surface of the body, and the infective principle, whether it be bacterial or protozoal, is conveyed in these scales or particles. In addition, the contagion or infection of scarlet fever can also be communicated by the nasal and buccal secretions, and as scarlet fever is always attended by more or less sore throat, this sore throat being a very severe and a most prominent symptom in some cases, it is a disease of easy spread unless stringent precautions are taken.

It is also very possible that the disease may be conveyed by the other secretions of a scarlet fever patient, such as the urine and feces, also, possibly, the vomited matter, though this may result from the fact that the vomit has passed through an infected throat.

Scarlet fever being, as has been intimated, usually a disease of childhood, it is to schools, public or private, that we must look primarily as a means for the dissemination of the disease in a community. Unfortunately, we are not at this time in possession of a prophylactic measure against scarlet fever as we are in vaccination against smallpox. Therefore, we are not able by one general method to prevent the spread of the disease. I think, therefore, it is fair to assume that, given a case in which scarlet fever has appeared among the pupils of any school, it would be well either to close that school or to make frequent—possibly daily—inspections of the health of the rest of the scholars. This inspection should take into consideration the general condition of the child, whether he presents suspicious symptoms—complaints of sore throat—or presents evidence of a commencing infection of any kind, as is noted by the symptoms of a bad cold, suffused eyes, or a coryza.

Sanitation and Disinfection.—The sanitary treatment of scarlet fever in a household should be upon the same general principles that have been outlined in the case of smallpox. The patient should be kept in an isolated room, preferably in the upper story of the house, and should be guarded from contact with all save those absolutely necessary to care for him, his physician and nurse. It is not our purpose to follow the clinical course of the disease, but during the height of the disease care must be taken to disinfect all discharges from the patient, especially the secretions from the nose and mouth; secondly, from the bowels and bladder, but it is only when the height of the disease is past and the brilliant scarlet eruption gives place to a commencing desquamation that the real trouble begins. This desquamation is a natural process and must go on. The outer layers of the skin have been rendered dead by the disease and must be eliminated, and so long as this desquamation continues the patient is a dangerous object and a source of infection to others. During the peeling or desquamatory stage of scarlet fever the patient's skin should be bathed once or twice a day with a germicidal solution. A weak solution of carbolic acid, not exceeding 1 or 2 per cent, should be used to bathe the entire body surface, and especially the hairy scalp. The use of carbolic acid for children under ten years of age is not unattended with danger; therefore some other antiseptic sufficient in power but mild in character may be substituted. A saturated solution of boric acid is a good one, and it is well that this solution be rendered decidedly alkaline by the addition of a small quantity of carbonate of soda. The throat should be gargled frequently and the nose cleansed with a mild antiseptic. Boric acid is probably the best solution for this purpose.

So long as a single scale is visible about the skin or upon the scalp of the child, so long is the child capable of conveying infection, and should not be released from quarantine until this process is entirely at an end.

The same care should be taken with the bed and body clothing of the patient as was recommended in smallpox.

Articles of value should be boiled or immersed in a strong germicidal solution. The carbolic acid solution is here good, or if facilities are

available, they should be thoroughly disinfected by steam. In removing the articles from the sick room to be either boiled, burned or steamed, care should be taken to envelope them in a sheet wrung out of one of the strong germicidal solutions.

A great source of the spread of scarlet fever has been the fact that the books, toys, or other articles used for the amusement or entertainment of the patient, are not disinfected at the end of the sickness. If these toys or books or playthings are of little value they had better be burned. If value is attached to them, either by their intrinsic worth or by association, they may be disinfected at the end of the illness by sulphur dioxid, or formaldehyd used by any of the methods prescribed as for smallpox, or, if permissible, by immersion in one of the strong germicidal solutions.

I do not intend again to go over the whole subject of disinfection with the minuteness with which I treated of it in the case of smallpox. Any one of the methods outlined in the treatment of that disease is applicable to disinfection after scarlet fever. I attach particular importance to formaldehyd because sulphur dioxid is destructive and injurious to fabrics and textiles. Particular attention should be paid to the walls and to cracks and crevices of the sick room. The quantity of epithelial detritus which results after an attack of scarlet fever is great beyond all belief, and so long as this is not reached by a disinfecting agent the room is dangerous for occupancy by others who are not already protected by a previous attack of the disease. Great attention should therefore be paid to washing the floors and scrubbing the walls of the apartment. If care has been taken in the early stages of the illness to remove all unnecessary articles from the room, an excellent plan would be to subject the room to a preliminary disinfection by sulphur dioxid, this to be followed by a scrubbing with a strong soda solution and a subsequent application of fomaldehyd gas by any one of the three methods which have already been brought to your attention.

Concluding Remarks—I feel that I have dismissed this part of the subject briefly, but I do not wish to be considered alone by what I have said, but rather by what I have referred to in the previous account of measures to be taken for the prevention of smallpox.

Isolation and disinfection are, therefore, our greatest safeguards in the prevention of the spread of scarlet fever, and these measures may, in the discretion of the health officer, with advantage be supplemented by house-to-house inspection, as has been recommended in the case of smallpox, and the immediate isolation of all children or adults who present the initial symptoms of the disease.

DIPHTHERIA

The time at our disposal being short, I am going to pass on to the subject of diphtheria.

Etiology—Diphtheria is an acute, specific, communicable disease caused by infection with the Klebs-Löffler bacillus. It is unnecessary

to point out to you at this day that the principal local symptoms of diphtheria are referred to the throat, where they are made manifest by the exudate or false membrane, highly fibrinous in character, which has given the disease its name, from the Greek (*diphtheria*) skin. It is to be distinctly understood, however, that diphtheria is to be regarded as a local infection with constitutional manifestations, the local being manifested in the throat, the larynx, and, in many cases, in the nasal passages. The disease is a distinctly bacterial infection whose degree of communicability is very great. The virulence of the organism varies and also the degree of susceptibility of different persons. The infectious agent is the Klebs-Löffler bacillus, and this is contained in the secretions of the mouth, throat and nose, and may also be sometimes present in the blood, causing a true septicemia, and may, in exceptional cases, be contained in the bladder and fecal discharges of the patient.

Prevention—In the matter of prophylactic measures diphtheria must be considered as occupying a medial position between smallpox—against which there is a well-recognized protection—and scarlet fever, for which we have as yet no well-authenticated prophylaxis. It is needless for me to bring to your attention that most wonderful discovery of the nineteenth century, the diphtheritic antitoxin, announced conjointly and at the same meeting of the International Medical Congress by the two eminent scientists, Behring, of Frankfort, and Roux, of Paris.

In the diphtheritic serum we have an agent of wonderful properties, an agent that has reduced the mortality to a degree which will ever render these two scientists the admiration of the scientific and lay world, and in the same agent we have at our disposal a measure of distinct prophylactic value.

I do not think it is necessary in this gathering to go into the subject with great minuteness; but, as in the case of scarlet fever, schools, public and private, and congregations of children for purposes of instruction or amusement are agents for the dissemination of the disease. A school in which diphtheria has made its appearance in the person of one or more pupils should be closed until thorough measures of disinfection can be applied to the building, and during the period of incubation of the disease it would be decidedly advantageous to have all pupils of the school subjected to a thorough and oft-repeated medical inspection, particular attention being paid to the general condition of the children and more especially to the condition of their throats and of their nasal mucous membranes. Every case of sore throat, mild or grave in character, should be subjected to bacterial diagnosis, and whether the symptoms are urgent or not every child or adult presenting suspicious microscopical forms in their throats as a result of these cultures should be isolated until the disease is frankly announced or until suspicion is removed. These examinations should be frequently and thoroughly repeated.

Sanitation and Disinfection—The sanitary treatment of individual cases of diphtheria should be conducted upon the general lines given for scarlet fever. The patient should be isolated in a room, and there should be no communication with the patient except on the part of necessary

attendants, nurses and the physician. The danger being in the Klebs-Löffler bacillus being contained in all the secretions of the mouth, throat and nose, it is obvious that these secretions should be thoroughly disinfected as soon as eliminated, and that clothes, handkerchiefs, etc., used to receive them should be either thoroughly disinfected or promptly burned. I am decidedly in favor of burning. The same measures apply to the bed and body clothing of the patient as apply in the case of smallpox or scarlet fever—they should be disinfected either by burning, boiling or by steam.

I do not intend here to enter into the treatment of diphtheria by the administration of antitoxin, but I do distinctly place myself on record as saying that the physician who neglects to employ antitoxin in the treatment of the disease lays himself open to criticism and deprives his patient, child or adult, of the very best means known to modern science in the cure of a dreadful malady. The question of immunizing "contracts" by doses of the prophylactic serum is one that the physician must decide for himself, and in this he must be governed largely by the prejudices of the parents and friends of his little patients. Speaking for myself, I should say that given a large family—especially one in which children predominate—it would be the wisest measure to administer a prophylactic dose of diphtheria antitoxin. It can do no possible harm and may be the means of averting an attack of diphtheria and of preventing the spread of the disease beyond the house in which it first appeared.

The same general principles as to the disinfection of articles in the sick room and the sick room itself as given for scarlet fever and smallpox apply to diphtheria. Especial attention should be paid to the drinking vessels and eating utensils, and these should always be thoroughly sterilized with actual boiling water. On no account should food which has been exposed in the room of a scarlet fever or diphtheria patient be used by anyone else, but it should be promptly destroyed. Again, in both scarlet fever and diphtheria we are confronted with the possibility that all of our efforts to cure disease and to prolong life may be inefficient. The same measures given in the case of scarlet fever and smallpox should be taken in regard to the disposal of the remains of the deceased. They should be wrapped in sheets wet with a strong germicidal solution, the body at once closed in a hermetically sealed coffin, and burial should be prompt. There should be no attempt at anything partaking of the nature of a public funeral. As in the case of smallpox, cremation would be advisable did facilities exist and the prejudices of friends and relatives permit.

CONCLUSIONS

I am going to bring this address to a close without farther comment. I have already said much, though much also remains to be said.

The three subjects committed to me for discussion are so vast that volumes might be written upon their management, but the time allowed me is that given to an ordinary address, and this time I am afraid I

have exceeded. I shall lay down certain axioms for your consideration and then close:

- 1, In the case of smallpox, *vaccinate, isolate, and disinfect.*
2. In the case of scarlet fever, *isolate and disinfect.*
3. In the case of diphtheria, *isolate, administer antitoxin, and disinfect.*

Had I said nothing more than to give these three closing remarks I would have covered the subject, giving you these cardinal principles, and leaving to your intelligence and experience the methods of carrying them out.

XV III

THE FLY AND MOSQUITO AS CARRIERS OF DISEASE*

BY H. D. GEDDINGS,

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GENTLEMEN,—In responding to the invitation of your secretary to address you upon the subject of "The Fly and Mosquito as Carriers of Disease," I feel that you have assigned to me a duty at once important, in that it embraces the consideration of the results of observations of men of eminence during the past few years; honorable, in that it is a subject of the deepest significance and requiring the most patient scientific investigation; and pleasant, in that it shows the confidence reposed in me as an individual in exemplifying the work of others.

Allow me to reverse the order in which the subject was presented upon the programme and first take up the subject of the mosquito as a transmitter of disease. Within less than a decade this subject has assumed the greatest importance, as up to that time, in fact, even to a later period, the transmission of diseases now recognized as being conveyed by the mosquito was laid down as one of those puzzling problems, the pathology and etiology of which were incapable of explanation.

In a body of this character it is unnecessary for me to say that diseases for the transmission of which the mosquito at the present time is held responsible are: First, malarial diseases; second, filariasis; and, third, yellow fever; with a new candidate for consideration as represented by the trypanosomes, the importance of which has only been recognized since the acquisition of territory in the Far East as a result of the war closed within the last few years. Naturally malaria must occupy most of our attention. This is perfectly natural, not only from the widespread existence of malaria, but from the influence which malaria has had upon the history of the civilized world. There is probably no influence so potent in preventing the extension of explora-

*Read at the meeting of health officers of Ohio, Columbus, Ohio, January 22-30, 1908. Reprinted from "Public Health Reports" by permission.

tions and the opening up of new regions as the prevalence of this disease, which we have always with us in more or less mild form and which in certain sections of the world assumes a virulence that to the uninitiated is simply terrific. No one influence, it may be again remarked, has so militated against the successful opening of the Tropics to commerce as this ever-present scourge. African explorers have found no enemy so dangerous as the terrible fevers that exist in the interior of the country, and it is only within the past few years, aided by the researches of men such as Laveran, Bignami, Marchiafava, Ross, Manson and a host of others too numerous to mention, that there appears to be a probability of the stumbling-block being removed.

No one is free from the danger of malaria in almost every section of the world, and Koch justly says:

"Malaria is met with everywhere. The officer in his bureau, the traveler in the interior, the soldier upon the march, all must recognize that sooner or later they are to become the victims of malaria."

No more important discovery stands as a milestone upon the road to progress than the original discovery by Laveran of the malarial parasite, removing the disease from that vague, indefinite sphere of an unknown entity combating human happiness, which is well intimated in its name derived from the Italian of "bad air" and signifying that it was an emanation of miasm, insidious in its methods of entrance and potent for evil in its effects upon human beings. Even after the discovery of Laveran of the nature of the infecting agent in malaria there remained much doubt as to the way in which it effected entrance into the human economy.

Malaria has been regarded for centuries as an air-borne disease, as indicated by its name. When general recognition had to be given to the almost axiomatic fact that for every disease there is a tangible cause, the plasmodium of Laveran answered to the causative agent; but there was no solution to the question for a long time as to how this parasite was conveyed from its ordinary habitat into the body of the unfortunate victim who became the subject of his chill, his paroxysm of fever, and of his stage of sweating. It was thought for a long time that the parasite was borne upon the miasm arising from swampy districts, thus effecting an entrance into the economy through the respiratory tract. This theory failed of scientific demonstration. Again, it was believed, and for a long time seemed susceptible of proof, that the parasite was ingested along with the water drunk, and passing into the intestinal canal there underwent multiplication and entered the great circulating fluid—the blood—and by its cycles of maturation caused the outbreaks.

Thus the matter rested until attention was directed to researches of Dr. Patrick Manson, who took the advanced position that an intermediate host in the shape of a certain gnat or mosquito was necessary in transmitting the disease from man to man and was also an inevitable portion of the cycle of the development of the parasite. No subject has been more carefully and elaborately worked out; in no research

known to modern science have fanciful or theoretical deductions been the subject of more careful scrutiny; and to-day the "mosquito theory" of the transmission of malaria is no longer a theory, but an accepted fact, and while it is impossible to say that it is the only responsible agent for the entrance of the malarial parasite into the human economy, it certainly answers all of the indications required by the most critical scientific mind and bears every test applied to it.

The Italian observers several years ago demonstrated the fact that it was perfectly possible to convey malaria from one individual to another by an injection into the circulation of the subject to be experimented upon of blood from a person suffering with malarial paroxysms; but it was immediately demonstrated that such paroxysms, while typical, soon passed off and did not have that virulence and persistency that characterizes the disease when acquired through natural channels. It would be a matter of too much time to reiterate here how, step by step, Manson, Ross and others were led up to the deduction that for the maturation of the malarial parasite in full virulence an intermediate host was necessary. No more interesting chapter of scientific literature could be laid before you for consideration at this time; but even to enter into the alphabet of the subject would demand an amount of time which would impose upon your good nature. To follow out the question thoroughly you must be referred to the literature upon the subject, which now has become historical. Suffice it to say that it would appear that for the perpetuity of malaria it is necessary that the parasites should be introduced into the body of an insect host and there undergo elaboration and multiplication, and at a certain period of the cycle of development should be injected by their intermediate host into the circulation of the human being, there to undergo further modification and to acquire their full virulence in the unfortunate individual who has been the subject of the bite of the insect host.

Experiments have demonstrated beyond cavil that not only is the mosquito the responsible agent, but that one single genus of the mosquito family is the host, by election, for the maturation and proliferation of the malarial organism. The ordinary mosquito of the genus *Culex*, is quite harmless in this respect. These mosquitoes are a pest, a nuisance pure and simple, but their occurrence in a locality is without pathological or etiological significance. For the successful propagation and transmission of malaria a certain family of mosquitoes—the genus *Anopheles*—is necessary. Many varieties of *Anopheles* are known—the *Anopheles claviger*, *Anopheles maculipennis* and the *Anopheles nigripes*; but it may be said in general terms that one of the family of "spotted-winged mosquitoes" must be present to constitute an essentially malarial neighborhood or environment.

The mosquito doctrine is not a new one. Nuttall states that nearly 2,000 years ago the Roman writers Varro, Vitruvius and others indicated that mosquitoes bore a casual relation to malaria. Knott referred to it in 1848, and King in 1883 wrote an elaborate argument in its favor. But it is to Manson, of England, that the credit belongs for a

reawakening of an interest in the subject, and in his Goulstonian lectures, of 1898, he followed the hypothesis which, after much discussion, much work, much acrimonious and polemic theorizing, has now been accepted as true; and it is not too much to hope that with a thorough knowledge and acceptance of the dictum as laid down by all these investigators, the names of some of whom have been given to you in the early part of this address, the suppression of malaria, the deadly foe of mankind, will be a matter of accomplished fact and that the march of civilization will proceed without encountering the terrible difficulties which have heretofore beset its path.

I will detain you for a few moments only to give you a very brief outline of the course of development of the malarial parasite within the body of the mosquito, taking the aestivo-autumnal form as a type.

The process of the development of the malarial parasite in the mosquito is evidently a sexual one, and takes place in the middle intestine of the insect; and, being sexual, there must be two agents concerned in it, which are, respectively, the crescentic body and the passive non-flagellated female elements known as macro-gametes. The crescents themselves are known as gametes, and the male elements or active flagellated bodies as micro-gametocytes and the nonflagellated or female elements as macro-gametes. Let us suppose that a person suffering with malaria in whose blood the crescentic organism is demonstrable has been bitten by one of these mosquitoes. If the middle intestine of a mosquito is examined within forty hours after she has bitten, the intestinal wall will be found to contain numerous spindle-shaped bodies identical in appearance with those observed in the human blood, but slightly larger in size. The bodies are pigmented, but the pigment, instead of being formed in a clump, or scattered as in the case of human blood cells, is ranged round the periphery. The bodies are situated on the outside of the epithelium and basement membrane of the intestine, between it and the muscular wall; that is to say, they are within the substance of the intestine.

From the second day developmental changes become very rapid and by the third or fourth day it will be seen that the bodies have very much increased in size and that the protoplasm has become granular. On the fifth day the increase in size has proceeded to a remarkable extent, the parasites becoming so large that they project from the intestinal wall like processes which contain numerous minute bodies that are nuclei, and shining particles resembling fat. On the seventh day the interior of the parasite contains an immense number of very delicate filaments which contain at the center a small amount of chromatin and are arranged like rays about a central mass, which may or may not contain some black pigment. These filaments are the sporozoites. After the seventh day it will be found that the capsule has ruptured, setting free the sporozoites, which now make their way into the tubules of the salivary glands, which will be found to be crowded with the parasites, and these, inoculated into man by the biting of the mosquito, undergo certain and as yet undetermined changes and become the hyaline, intracellular malarial parasite.

The cycle of the malarial organism may, therefore, be summed up into two great stages—the human cycle and the mosquito cycle—which may be described as follows:

The human cycle in five stages:

1. Sporozoite.
2. Hyaline body.
3. Pigmented body.
4. Segmenting body.
5. Crescentic body.

Taking up the study where we left it, therefore, we pass into the mosquito cycle, which also has five stages, viz:

1. The crescentic body, or gametes.
2. The round passive body, or macro-gametes.
3. The round, active flagellated body, or micro-gametocytes.
4. The encapsulated cystic body.
5. The sporozoite, again ready to enter the human economy through the instrumentality of the bite of the mosquito.*

I am conscious, gentlemen, that this is the barest outline, so bare a skeleton that I am almost ashamed to present it; but, as has been before remarked, the time at the disposal of this gathering will not permit a more elaborate exemplification of this most interesting process.

It may be asked: What bearing does this have upon the question of malaria as it affects us as county, city and village health officers, almost all of whom are practicing physicians? What influence do the description given and the researches enumerated have upon the well-being of the communities and the patients entrusted to our charge? What practical deductions are to be drawn from these highly interesting philosophical demonstrations? The reply is that, as surely as night follows day, so surely will the destruction of mosquitoes of the genus *Anopheles* in a given locality be followed by a marked diminution of the malarial disease and with the entire destruction of the insect pests by an entire disappearance within a short time of cases of malarial manifestations.

Therefore, what has been presented to you is not simply a scientific discussion of historical interest, but it affects physicians, their patients and communities under their charge in an eminently practical way. The lesson to be drawn is, that in a malarial community the main object should be to strike at the root of the evil by the destruction of the mosquito responsible for the transmission of malarial disease from man to man. When it is remembered that a single female *Anopheles* may, after biting an individual affected with malarial fever, set free millions and millions of sporozoites and may infect with malaria every individual whom she bites, that she lays a large number of eggs and that a large proportion of these eggs come to maturity, thus producing a new crop of mosquitoes ready to bite other individuals, it will be seen that the process is like the endless-chain letter system, which, begin-

*The Estivo-Autumnal Fevers, New York, 1901, by Chas. F. Craig, Assistant Surgeon, U. S. Army.

ning with one individual, will in time unless checked reach an almost countless number.

Mosquitoes should be destroyed wherever found, and no surer way exists of destroying them than to prevent the ovidepositing of the females. Water is the essential element required in this ovidepositing. The female must have a larger or smaller body of water upon which to deposit the wonderful canoe-shaped mass of eggs that she lays. Therefore the filling up of all stagnant pools of water, the drainage of large bodies of water, the abolition of water barrels, the screening of cisterns, even the emptying of the old tin can about premises which may contain rain water, are all essential steps in the mosquito campaign, and it is by a campaign against the mosquito that we must arrive at the suppression of malarial disease. Should the ovidepositing of the female have taken place, means must be adopted for the destruction of the ova or the larvæ and the pupæ, should they have passed into these stages. No other agent is probably so effective in this direction as the use of petroleum upon ponds or bodies of water. should it be impossible or not feasible to drain them thoroughly or fill up with fresh sand their original site.

Remember, that, taken in conjunction with each other, a person afflicted with malarial paroxysms in a locality where any variety of the genus *Anopheles* prevails is reasonably certain to spread the malarial disease throughout the community.

This most interesting and vital branch of the subject, gentlemen, has been dwelt upon at such length that but little time remains to take up the other disease for the transmission of which the mosquito is responsible. Therefore, I omit any mention of filariasis or trypanosomes and pass on to briefly discuss the mosquito theory of the transmission of yellow fever.

Unfortunately, unlike malarial disease, the parasite of yellow fever has not been demonstrated, and until this is done we can not approach the subject with that certainty with which we can describe malarial fevers. This only is known: That, unlike malarial diseases, the genus *Anopheles* of the mosquito family is not responsible for its transmission; but the transmitting agent is the female of that family, known as the *Stegomyia fasciata*. Possibly it is that time and further study will develop the true parasite of yellow fever, and that its life history and method of transmission may at some future time be described as minutely and as accurately as has been done in the outline which has been laid before you.

The theory originally propounded by Finlay, of Havana, lay fallow until taken up by that quartet of earnest workers—Reed, Carroll, Lazear and Agramonte. Lazear fell a victim to his enthusiasm and may be said to have laid down his life for the cause in which he was so deeply interested. Reed has joined the silent majority, and when, in the future, the hypothesis so ably maintained by him shall have acquired all the force and dignity of a doctrine, the subject can not be approached or written on without a tribute of love and reverence to his memory.

With the full knowledge that the subject has been very imperfectly touched upon, and spurred on by the lapse of time, we must rapidly pass on to the consideration of the second branch of our subject, viz, diseases transmitted by flies. The subject, while not as complex as the one of the mosquito, is still full of interest; but we will limit our consideration to two diseases, potent in vastness and fraught with the direst calamities to humanity. One of the two diseases will be that great epidemic pestilence which, from time to time, devastates whole regions of the Orient and from which in times past the United States itself has not been free, viz, cholera.

As far back as 1890 it was demonstrated that the ordinary house fly could carry within its intestinal tract live cholera vibrios; that they could there multiply and could be deposited in the fecal excreta of the fly either upon water or upon the food and thus, under favorable conditions, become the responsible agent for the spread of the infection. The matter has an obvious practical bearing for the consideration of a gathering of health officers, for it may be taken as practically evident that cholera is not alone a water-borne disease, but that our measures of precaution and safety are not completed until we have effectively assured ourselves that flies do not have access to the discharges of a cholera patient; or, if such be impossible, that these discharges are rendered innocuous by efficient disinfection. Therefore, the disinfection of the discharges of the cholera patient not only is demanded in order that the water supply may not become contaminated, but having the further end in view that, should the domestic house fly feed upon them, it may not through its intestinal canal contaminate the food and drink of others.

Let us rapidly pass on to a consideration of the fly in the dissemination of typhoid fever. During the Spanish war a committee of medical officers was appointed by the Surgeon-General of the Army to investigate the subject of enteric fever in the military camps, and in an admirable report they arrived at certain conclusions which were the specificity of the Eberth bacillus, the influence of infected water in spreading disease, and the great danger attending the instrumentality of flies in disseminating the Eberth bacillus by feeding upon typhoid dejections and thus contaminating food and drink upon which they might alight. The lesson borne in upon us, therefore, is the same as in the consideration of cholera: The absolute disinfection of all discharges, alvine, urinary and buccal, of the typhoid patient, for these discharges all do at one time or another during the occurrence of a case of typhoid fever contain the responsible Eberth bacillus and, subjected to contact with flies, may through the instrumentality of this disgusting pest be responsible for the spread of the malady to persons at greater or less distance. In this, as in every other communicable disease, eternal vigilance is the price of safety.

No more serious subject can occupy the attention of a careful health officer, and the health officer who simply guards the water supply from contamination, great though his results may be, can no longer be

regarded as having performed the full measure of his duty. He must look after the fly. It should be excluded from the rooms of the sick; it should not be permitted to gain access to any of the discharges of the typhoid patient. Though in guarding the water supply the health officer may have closed the most important opening, the neglected minor precaution leaves a gap, and, to use a well-worn axiom, "the strength of a chain is the strength of its weakest link," until he has paid as much attention to one source of danger as to another his chain of defense is not perfect, but may give way at the weakest point.

At a meeting of the Association of Military Surgeons of the United States recently held in Washington, D. C., the writer had the honor of presenting a paper upon "The prophylaxis of certain diseases incident to camps in time of war," in which he took the position that, to guard against the appearance of typhoid fever in the future, certain points should be taken into consideration, which were as follows:

1. Early recognition and positive diagnosis.
2. Absolute disinfection of the discharges of all hospital febrile cases.
3. Rigid policing and disinfection of all camp latrines.
4. Guarding of water supplies from infection, not only by careful prevention of direct contamination, but by foresight in the location of latrines in relation to the sources of water supply.
5. The employment of every possible means to prevent the multiplication of flies, and the infection by them of kitchens and messing places.

It was also suggested that in future it would be wise to consider every case of enteric fever as an "infectious case" and to treat them in a special hospital provided for the purpose and not in the general wards of a military hospital.

So important, gentlemen, is this subject of the transmission of enteric fever that it would seem in the future we should lose no opportunity of profiting by the terrible lessons that have been taught in the past. This applies not only to military operations. In the future it would seem wise that where there is to be any large aggregation of persons for a long period of time, a preliminary period of observation under conditions approaching those obtaining in camps of detention should be practiced before the individuals be allowed to assume the new duties which may devolve upon them. This period of time, it is suggested, should be for the period of the incubation of the disease and every case of illness or indisposition should be thoroughly investigated with a view of excluding possible cases of enteric fever and enabling us to take the proper precautions in handling them. This period of observation completed, the individuals may then pass from detention camp conditions to conditions and environments as are necessary for the object in view, be these objects military, civil, political or social.

Another point which has been suggested by Surgeon-General Wyman and which does not seem as yet to have been mentioned, or if mentioned has not as yet been printed, is that in future in all such large

gatherings the latrines or other provisions for the disposal of personal dejecta should be rendered fly-proof by screening with wire netting. This may appear a stupendous task; but were the difficulties even greater than they really are, it is believed that the end would justify the means and that we would reap an abundant harvest of good. In camps the capacity of latrines is carefully calculated upon the basis of the number of persons for whose use they are intended. It would seem that large supplies of wire netting upon wooden frames should accompany the camp equipage and that at the time when the latrine is dug the screen frames should be erected and the latrine thus rendered fly-proof from its very inception. This "fly-proofing" should be carried to the most rigid extreme, even to the extent of rendering entrances impermeable to flies by an arrangement of vestibules or double doors. Having accomplished this end of excluding flies, the most rigid precautions should be taken to insure the covering and disinfection of the dejecta, and when the trench or pit is filled to the depth determined upon the screen can be taken down and removed to a new site.

In the disinfection in camps against typhoid fever attention is invited to a procedure mentioned by Major Griffiths, who states that much good resulted in his practice in such disinfections from disinfecting not only the tent or temporary habitation where a case of enteric fever had occurred, but in extending this disinfection rigidly to three or four tents upon each side of the one represented to be infected. This would seem to be based upon the presumption that the fly does not indulge in long flights, but having selected a locality agreeable and suitable to himself, he never departs far from it. In this way it would certainly seem that there might be a certain limitation to the dissemination of the infection of enteric fever.

I feel, gentlemen, that I have presented to you in a very imperfect way, views upon the topics which form the subject of this paper. Much more could be said; little has been said in comparison with the amount of material at the command of one looking up the subject. While I may have conveyed to you nothing original, it may be that the subjects presented will lead one of you to research and to an endeavor to secure better results. If such be the case, the time spent by you in listening to these remarks of mine, and the labor expended by me in presenting them to you, will indeed have been a source of pleasure for me and, I trust, a source of some profit to you.

XIX

INEBRIETY AND ITS MANAGEMENT*

That inebriety is a fruitful cause of disease is a universally admitted fact. Profane and sacred history alike chronicle not only its demoralizing but its disease-and-death-producing effects.

DISEASES PRODUCED BY INEBRIETY

It may be well, first, to consider briefly this phase of inebriety. The term alcoholism will be used as applying to all diseases directly or indirectly due to the use of alcohol. Dr. Huss, of Stockholm, the originator of this term, divides it into acute and chronic alcoholism—the former drunkenness and its immediate consequences and the precursor and cause of the latter. Chronic alcoholism is a condition of serious mental and physical disorder, and produces pathological results that are not only serious but are very diverse in their manifestations. These diseases have been classified as follows:

1. Disorders occasioned by strain imposed on the system by alcohol.
2. Diseases traceable to general system-degeneration produced by alcohol.
3. Diseases which but for alcoholic system-degeneration might have been averted or restricted.

Prof. Christinsson, of Edinburgh, said in a letter to the Massachusetts state board of health:

"I recognize certain diseases which originate in the vice of drunkenness alone, which are delirium tremens, cirrhosis of the liver, many cases of Bright's disease of the kidneys and dipsomania or insane drunkenness. Then I recognize many other diseases in regard to which excess in alcoholics acts as a powerful predisposing cause, such as gout, gravel, aneurism, paralysis, cystitis, premature incontinence of urine, erysipelas, spreading cellular inflammation, tendency of wounds and sores to gangrene and inability of the constitution to resist the attacks of diseases at large. I have had a fearful amount of experience of continued

* Read by J. F. Kennedy, Secretary State Board of Health, before the State Board of Control.

fever in our infirmary during many an epidemic, and in all my experience I have only once known an intemperate man of forty and upwards to recover."

He further claimed that three-fourths, or even four-fifths, of Bright's disease in Scotland is produced by alcohol. I might quote from Murchison, Richardson and scores of other Europeans as well as American authors, showing a greatly increased list of functional and organic diseases as being caused, directly or indirectly, by the use of alcohol—diseases affecting the brain, lungs, heart, kidneys, liver and digestive and reproductive organs. Before such an audience, however, this is unnecessary.

You, gentlemen, are only too familiar with the different forms of alcoholic insanity—such as acute alcoholic mania or mania-apotu, acute alcoholic delirium, or delirium tremens, and alcoholic epileptiform mania.

DUTY OF THE STATE

If so many serious physical and mental diseases result from the use of alcohol, what is the duty of the State in the matter of preventing, so far as possible, so much sickness, insanity and moral wreckage, and in properly caring for those thus diseased and stranded? The State has given the State Board of Health a general supervision of the lives and health of the people and has authorized it to make rules and regulations for the protection of the public health, which, when made and promulgated, have practically the effect of legislative enactment—the statute providing penalties for the violation of these rules and regulations, or for refusal or neglect to comply with them. But here is a large class of acquired and preventable diseases patent not only to the physician and sanitarian but to the layman as well; and yet the State Board of Health has not discovered any effectual, if possible, way of prevention; nor has the legislature, the press or the forum been more successful. Moral suasion, legal suasion, education, the teaching in our public schools of the evil effects of alcohol, the daily exhibition by its unfortunate victims of its dangerous results have all been tried and are still on trial, and yet, as the ranks of the inebriates are thinned by death there seems to be an on-coming army to take their places.

TOBACCO AND INEBRIETY

I do not know whether my observations and the deductions based thereon are unique, or not, but I here deliberately declare that during a professional life extending over nearly forty-five years I have never known a confirmed inebriate that was not, or had not been, addicted to the use of tobacco. In a number of cases of physicians with whom I talked I have been told that in their own personal experience they found a remarkable relationship between their use of tobacco and their attacks of inebriety, and they were only able to overcome their habit of strong drink by first discarding the use of tobacco. I would not for one moment say that all tobacco users also use alcohol, but I do believe that the ranks of the inebriates are largely recruited from those using tobacco.

Many take to stimulants to drown sorrow; to supplement their strength in physical and mental labor; to conform to the social amenities of life and as a therapeutic agent with, or more commonly without, the advice of the physician. It matters not what the motive is, however, in a large number, a frightfully large number, the occasional glass becomes the habitual glass and the tippler becomes the inebriate.

PREVENTION

I am led to believe that fully seventy-five per cent of those who become inebriates begin the use of alcohol, by which I mean all beverages containing alcohol, before they have reached the age of twenty-one. While proper precept and example in the home and in the public and private schools will do a great deal, and could do vastly more, to prevent inebriety, there is much that can be done, and is being done, by the great corporations refusing to employ or to keep in their employ any men or women who to any extent indulge in alcoholic drinks. There is a vast proportion of boys and young men who have a noble ambition to succeed who could not be induced to enter upon a course that would shut up so many avenues to success.

I believe the State should not only enforce rigidly the statutes forbidding the sale of cigarettes, tobacco and intoxicants to minors, but make the use of intoxicants a cause for the dismissal from office of any State employe or official. The legislature has given the State Board of Medical Examiners the right to revoke the certificate of physicians given to habitual intoxication.

Knowing the causes of inebriety so well, the best measures of prevention are at once suggested. Successful vaccination is the most reliable, if not the only reliable, means of protection against smallpox. Of course all will concede that a more reliable, indeed, and absolutely reliable safeguard against inebriety is total abstinence from the use of alcohol. Whatever will lead to a larger number of total abstainers will, just to that extent, reduce the number of inebriates, since all inebriates come from the ranks of non-abstainers.

Hence there should be redoubled efforts in the home, in the school, in society, in the pulpit, in the public press, in literature everywhere, to present to the young the dangers of even the occasional use of alcohol, and the further fact that the use of tobacco may lead to inebriety. The law should supplement these efforts by making it as hard as possible for minors, especially, to procure tobacco and alcoholic drinks.

HEREDITARY INFLUENCES

There is no doubt that a tendency to inebriety is inherited, and hence confirmed inebriates should not be granted by law the right to beget a tainted offspring.

On this point the very distinguished superintendent of the Royal Morningside Insane Asylum at Edinburgh, Scotland, in his Eighty-eighth Annual Report says: "Only a few of us preach teetotalism to all men,

or total prohibition, or any other such strong measure. But from our experience in practice, our knowledge of human nature in its dual relationship of body and mind, and its hereditary weaknesses, doctors are able to speak with authority in regard to the disease—potential and actual, present and future—which the excessive consumption of drink is causing in our population. A consumptive race might conceivably be absolutely cured in two generations, or even in one, by good conditions. I don't think a drink-sodden race could be fully cured in a hundred years."

While the use of alcohol as a beverage is a fruitful cause of disease, and it has been so regarded from remote antiquity, yet it is not so generally conceded that inebriety is itself a disease. By many it has been regarded, and is still regarded, as a vice, and penal codes are invoked and enforced against its victims. I find in looking up the literature of the treatment of inebriety that two theories as to the character of this condition prevail—the one regarding it from a moral and the other from a physical standpoint, and adapting their treatment to their respective theories.

The most prominent and pronounced advocate of the moral theory and treatment is Dr. C. J. Gibbons, Superintendent of "The Franklin Reformatory Home for Inebriates," located in Philadelphia; and of the physical is Dr. T. B. Crothers, president and superintendent of Walnut Lodge Hospital, Hartford, Connecticut.

Dr. Gibbons, of the Franklin Home, in his twenty-ninth annual report (1901), says: "When we recall the labored attempts to class intemperance among the physical diseases, despite the demonstrated inability of science to cure it or to diagnose its symptoms, it is not surprising that there should exist confused ideas on the subject. * * * As soon as the Home was opened the managers were confronted by two problems. Should its beneficiaries be treated as the victims of a disease, transmitted through father or grandfather, or regard the inebriates as the slave of an appetite, created and fostered by the use of alcohol? They determined to consider the drinking man and his drunkenness as presented in every-day life, rather than from the conclusions of scientists. Some of the latter boldly advanced the theory that the passion for alcoholic drinks is a disease, over which the victim has no control. This conclusion was eagerly adopted by physicians, whose patients would refuse to hear unpalatable truths, but not to being treated for 'dipsomania.' The Home rejected this theory. It makes the inebriate a subject only for the hospital or insane asylum. It is a pernicious and dangerous fallacy, destructive of man's free will by its release from moral obligation and responsibility.

"Teach the drunkard that he is the victim of heredity and you make of him a weakling who untruthfully prates upon the physical infirmities of his ancestors as the source of his own downfall. Teach him that his way towards reclamation is through a medicine chest and you place him on a flimsy pedestal of strength which makes him only strong enough to get drunk again. But teach him that he has sinned, that his diseased condition is the result of that sin, and to remove this diseased condition he must assert, through faith, the manhood with which God

has endowed him, and you have placed the drunkard on the first step of the only ladder which leads to complete and lasting reformation."

Dr. Gibbons says further, however, in modification of the foregoing: "The Home does not deny that drinking men develop a diseased condition of mind and body, to meet which we have our medical department. * * * After, however, a man is restored to a healthy and normal condition, neither physician nor medicine can restrain him. At this point his reformation begins."

The Doctor gives the following summary of thirty years' work along this line: "Number of inmates received, 6,820; number of men permanently reformed, 3,079."

Speaking of this result Dr. Gibbons says: "This average of permanent reformation, being forty-five per cent of the total number of men received, is believed to be greater than can be shown by any other institution in the country."

I may say that so far as I could obtain data relative to such institutions, this Franklin Reformatory, in the position above taken, stands almost alone.

It is a well settled conviction, however, that inebriety is not only a disease, but a difficult disease to permanently cure. The hospitals that exist today are but the practical outgrowth of truths centuries old. Ulpian, a noted Roman lawyer in the second century of the Christian Era, strongly advocated the treatment of inebriates as diseased. In 1747 Condillac, of France, advocated special hospitals for drink maniacs. In 1790 Dr. Benjamin Rush, of Philadelphia; in 1802, Dr. Cabanis, of Paris; in 1809, Dr. Platner, of Leipsic; in 1817, Dr. Salvator, of Moscow; in 1818 Dr. Esquirol, of France; and in 1822 Bruhl Cranmer, of Berlin, all urged the need of physical restraint and treatment of the inebriate as sick and diseased in hospitals and asylums. In 1809 Dr. Benjamin Rush, of Philadelphia, published a work entitled "Medical Inquiries," in which he declared "that intemperance was a disease and that hospitals for its exclusive treatment should be established in all the principal cities of the land."

In 1830 the Connecticut Medical Society appointed a committee to report on the need of an asylum for the medical treatment of inebriates. In 1833 Dr. Woodward, of the Worcester Insane Asylum in Massachusetts, urged that inebriates be regarded as insane and sent to the asylum for special treatment. In 1844 the English Lunacy Commission urged that inebriety be regarded as a disease, and that special hospitals be provided for its treatment.

Dr. T. D. Crothers, superintendent of Walnut Lodge, above referred to, says: "It is a curious fact that inebriety was recognized as a disease long before insanity was thought to be more than spiritual madness and a possession of the devil. This fact has escaped the attention of persons who assert that inebriety is always a vice and that the disease theory is only an extravagant view of enthusiasts peculiar to our times. For over a century the disease of insanity was denied and contested. Inebriety passed the same ordeal of ignorant opposition and criticism, al-

though it has been recognized by a majority of the leading physicians of the age.

"Once the fact that inebriety is a disease became fully established the asylum method of treatment came to be regarded with favor, and the first institution for the treatment of this class of unfortunates was at Binghamton, N. Y. To Dr. J. E. Turner, of Maine, belongs the credit of securing the first such asylum in the world. He was so thoroughly convicted of the need and beneficence of such an enterprise that in 1846 he began an enthusiastic agitation of the subject. After eight years of persistent effort, amid great opposition and many discouragements, he succeeded in enlisting the co-operation of a number of eminent medical men, who formed a stock company and proceeded to raise funds to build and equip an inebriate asylum. The company was incorporated as the United States Inebriates Asylum. Only subscriptions of \$10.00 could be obtained. The eminent Dr. Valentine Mott, of New York City, was chosen its first president. The city of Binghamton, N. Y., donated two hundred acres of land and the asylum was located there. Dr. Crothers says: "The asylum at Binghamton began on the most advanced principles of receiving none for less than one year and having absolute restraint over them during this time. It asked no pledges or promises from the patient; it aimed to give each one positive protection and medical treatment. The patients were locked in at night and only allowed out under the strict care of attendants. Each case was considered a suicidal case of insanity, requiring long medical care and restraint. These methods were far in advance of that time and today are recognized as the latest teachings of science."

As this institution afterward became a state asylum it affords the most conspicuous example of such an experiment. Its subsequent history will therefore be interesting. Upon this point Dr. Crothers says: "The principles, plan of organization and treatment were new, and although endorsed and supported by its distinguished presidents, Drs. Valentine Mott and George W. Francis, of New York, and Chancellor Walworth, of Saratoga, created much difference of opinion.

"The patients themselves, after the immediate recovery from the effects of spirits, protested against the confinement and doctrine of disease, and sought in every way through their friends to break up the methods of treatment. As many of them had been influential men, and had influential friends, a storm of the most bitter opposition began against the founder and superintendent, Dr. Turner.

"The points of difference were these: The asylum and management insisted that each case was more or less diseased and should be under absolute control and restraint long enough to effect a permanent cure. The patients and their friends insisted that while the case might be diseased his recovery depended largely on his liberty and promise to get well; that restraint was irritation and injury, and that appeals to his honor and manhood were the real agents for final cure. In brief, one plan proposed long restraint; the other no restraint except nominal care at first, then persuasion and advice.

"The board of management changed, and Dr. Parker, of New York, became president. They adopted the free and easy plan, and turned Dr. Turner out. The central object was to make the asylum popular with the patient. The bitter controversy which gathered about the management of this asylum attracted politicians, and the noted Wm. M. Tweed, of New York City, and others became directors. In 1867, three years after it was opened, the board of managers deeded the property to the state of New York for one dollar, without the advice or consent of any authority. From that time a series of misfortunes followed during which seven superintendents were in charge in eleven years. Then the state changed the asylum to an insane hospital, and the political governor, in justification to the act, called the inebriate asylum a failure."

Commenting upon the declaration that this institution as an inebriate asylum was a failure, Dr. Crothers further says: "The enthusiasm which had centered about this work at different times reacted and the idea of failure and condemnation of asylum treatment for inebriates was spread far and near. Had the physical treatment of the inebriate been a theory only this would have been its final death, but, like all other great enterprises of the world, the death of the Binghamton marked the birth of a large number of similar asylums, some of which are doing grand work in the world."

This comment was uttered by Dr. Crothers in 1888. In a letter received from the Doctor, dated January 9, 1902, he says: "I was assistant at Binghamton from 1874 to 1878 and knew of its work and the statistics which can be relied upon. It was wrecked in a political scramble. All the institutions suffer for want of proper laws giving them control over the patients; also from incompetent managers. It is more difficult to care for the inebriate than the insane. Good men in charge of inebriate asylums have resigned in disgust at the annoyance and unsatisfactory results. Hence in many institutions there are frequent changes of managers, making it impossible to master the subject thoroughly by any one man. The Massachusetts state asylum at Foxborough is successful. Many private asylums have proven the curability of the inebriate, under proper treatment. Keeleyism is rapidly declining, and it has made but little difference with the regular institutions except to increase the number of chronic cases."

I wrote to Dr. Charles E. Woodbury, superintendent of the Massachusetts Hospital for Dipsomaniacs and Inebriates, located at Foxborough, and received from him the following letter:

I send you, under separate cover, a copy of our hospital report for 1900 and hope within a few days to forward you one for 1901, which is now in the printer's hands. In these reports you will get most of the information you seek.

From time to time since the opening of this hospital there has been considerable agitation by our legislature as to the advisability of continuing the work; this year the question is still under advisement by a committee of the legislature as to just what the future policy of the hospital shall be; I have no question but what it will be continued, but I also

think that the line will be drawn much closer as to the kind of cases to be treated.

Formerly the magistrates thought it a good place to put cases which were continually coming before them and for whom a jail or house of correction was not exactly applicable. In this way a great number of undesirable cases were admitted. If we can draw the line and confine the hospital work simply to cases which are susceptible of cure or improvement we shall attain our object. To quite an extent we have already reached that point, as our cases are improving in quality and lessening somewhat in quantity.

I have no doubt about the advisability of hospital treatment for inebriates, but I think it should be supplemented with the probation system; we have made a beginning and the problem now before us is to so extend that work that a patient may establish at home and about his business a cure begun here, provided such patient is needed to support his family or attend to neglected business.

The cases we have disposed of in this manner have thus far shown most excellent results, but unfortunately it is at present a labor of love with our probation officers, who have no legal authority over patients whom we discharge, nor any recompense for their work, but without exception I have found them very ready and willing to assist. I am in hopes that we shall have some legislation which will give legal authority and pay to these officers.

On page 19 of the report for 1900 you will find a list of cases regularly discharged, who were seen afterwards, they having been absent from the hospital from three to sixteen months; the average of cases remaining abstinent is higher in 1900 than last year, and the yearly average is considerably higher than a record running back five years, which I hope to obtain before another twelve month; you can readily understand that this is a work of considerable magnitude, as our discharged cases are scattered over a wide territory and many of them are difficult to reach. I think if we reach 20 per cent who have remained abstinent from three to five years we shall be doing well.

This hospital is no place for the criminal or chronic drunkard; the first can properly be taken care of in any of our penal institutions, and the second, who are not criminals, but hopelessly degenerated, should be cared for in some other place. Just what that should be is a question we are now considering, but certain it is that the three classes—criminal, chronic inebriates and the curable type—should not be together in one institution.

Our methods are all remedial and not punitive, and only such deprivation of freedom is required as is necessary up to the point when we think a patient may be allowed to exercise his self restraint, when he is given parole of the hospital grounds.

For medical treatment such tonics, etc., are given as the case requires, also physical training in the gymnasium, supplemented by an excellent and unique system of tonic needle spray baths, and we also have a special bath system known as the "Baruch." These baths aid largely in a restoration to a normal physical condition.

Mentally he is encouraged by books, entertainments and amusements of various kinds. I also keep the men employed as much as possible upon the farm or in our workshops and about the different work which an institution always has—the kitchen, dining room, laundry, etc.

I have found that the more readily a man works, and especially out of doors, the more rapid is his recovery and the surer I feel that he will not return to old habits after discharge.

The trustees discharge on probation when they think a patient has been here a sufficiently long time to warrant it.

Any further information that I can give you will afford me much pleasure.

Very truly yours,

CHAS. E. WOODBURY,

Superintendent.

According to Dr. Crothers there are over fifty inebriate asylums in active and successful operation at the present time in England, Scotland, Australia, New Zealand, Germany, Switzerland, Norway, Sweden, France and this country. The results of treatment in these institutions have been very encouraging. I do not know how the number of permanent recoveries compares with those in cases of insanity. It seems, however, to me, that a perfectly cured insane person can never regain the position formerly held in the social, intellectual and commercial world that a perfectly cured inebriate can and does. Hence the cure of the latter is more important to the community than of the former. In inquiries made by the Binghampton asylum in 1874, it was found that in one thousand cases who had been dismissed as cured at the end of five years sixty-two and a half per cent were temperate and total abstainers.

Dr. Day, of the Washingtonian Home, Boston, in two thousand cases after ten to eighteen years found over thirty-four per cent sober.

Dr. Mason, Kings County Home, Brooklyn, in six hundred cases after ten years found thirty-four per cent. As stated before in this paper, the Franklin Home, of Philadelphia, claimed over forty-five per cent. The most careful authorities in this country and Europe claim that fully one-third of all their cases treated were permanently cured. Certainly this is a very encouraging, if not remarkable, showing and would fully justify the philanthropist or the State in adopting and enforcing such methods.

I may be pardoned for laying before you in brief the practical methods suggested and used by Dr. Crothers in the treatment of these cases, believing that to a large extent they are applicable everywhere.

He says: "In a hospital conducted upon scientific, common-sense principles, the patients are received for periods of not less than three or six months. He signs a commitment paper, and is examined by the physician and all the facts of his present and past condition noted. If intoxicated he is placed in charge of a nurse and baths and remedies are given for his special condition. If sober he is given a pleasant room and placed upon a regular diet, exact conditions of living, and required to take such medicines, baths, exercise and general treatment as may be needed in his case. Mental occupation, amusement, change of thought.

and life in every particular are sought for. He is treated as one who has a profound disease of the brain and nervous system, requiring rest, care and removal from every source of irritation and excitement. The asylum is a quarantine where he can recover, and his liberty or restraint is governed by his condition. Wherever congenial work can be added to the amusements it is done as a medicinal aid. Every condition of life is controlled and regulated, and every surrounding arranged to aid recovery. Daily religious exercises, rides, walks, Turkish baths and exact, methodical living most naturally results in a degree of strength and vigor that is very promising for the future. The use of alcohol is abandoned from the start, and its danger is taught every way. The return of the drink paroxysm is anticipated and prevented by medicines and special care, and the patient is thus enabled to outgrow the drink craze and to recover a degree of health (which will give strength) to abstain in the future. In a certain number of cases the drink impulse, or symptom, seems to be permanently exhausted after a time, like the exhaustion of the germ soil of some diseases, and no exciting causes will develop the drink symptom again. Other defects may appear, but he never again uses spirits. The germ soil has gone; it may be forever, or after the lapse of years it will return.

A period of six or twelve months in an asylum will remove the states of delirium which have kept up the use of alcohol, and reveal an exhausted brain and nerve soil that will not tolerate alcohol in any form thereafter. The person suddenly realizes that alcohol is both poisonous and repelling to his system. This may be so intense that should he take any form of spirits by mistake it will produce intense nausea and depression. In other cases this drink exhaustion dies out after long years of abstinence, and should the patient relapse late in life death follows soon after. A careful study in an asylum often relieves these cases, and the expert can safely predict a total or partial cure of the drink symptom and disorder, or its temporary suppression. Another fact, not generally known, appears to the asylum physician, namely the great uniformity of the symptomology and progress of these cases. Beginning at a certain point, or from a certain range of causes, they follow a uniform line of progress, which can often be seen, traced and predicted with certainty."

The general conclusions arrived at by Dr. Crothers, as based upon the most recent teachings of science and experience, are as follows:

"1. Inebriate hospitals must take the place of jails and station houses. Such places are dangerous in their mental and physical surroundings, by intensifying the degeneration and removing the patient beyond hope of recovery. They are in many cases literal training stations for mustering in armies of chronic maniacs that never desert or leave the ranks until crushed out forever.

"2. The inebriate hospitals should receive the incurable inebriate and make them self-supporting, and build them up physical and mentally. They would relieve the tax payer and relieve society of untold burdens of sorrow and misery.

"3. Inebriate hospitals should receive the recent cases and place them in the highest condition of enforced health and vigor, and thus return a large number to health and sobriety again.

"4. Inebriate hospitals can and should be self-supporting when once established. They should be managed on scientific business principles, like military training schools.

"5. Inebriate hospitals should be built from the money raised by taxes on the sale of spirits, on the principle that every business should be obliged to provide for the accidents that grow out of its use.

"6. The inebriate hospitals of today are only in the infancy of their work, contending with great opposition and prejudice, misunderstood, condemned, and working against innumerable obstacles.

"7. The work of the present inebriate hospitals, notwithstanding all the difficulties and imperfections, has the grandest promises for the future and encouragement for further effort in this field, along the line of scientific research.

"8. Inebriate hospitals and their work is the great new land which only a few settlers have reached. They are calling us to come up and occupy, and thus help the race on in the great march from the lower to the higher.

"9. Lastly, there is an intense personality in inebriate hospitals to each one of us. They may bring salvation and restoration to some one near and dear. They may be fountains of healing whose influence shall cross and influence our pathway in many ways."

I compile the following additional facts from letters received touching the matter under consideration:

Dr. Amos J. Givens, of the sanitarium at Stamford, Connecticut, says: "We have always a large number of the better class of patients who can afford to pay for comfortable, home-like surroundings, and who do not wish to go to a state institution. The state institutions, in my opinion, are not intended for inebriate asylums; they are rather intended for patients or persons who are mentally unsound, and it is my observation that it is not desirable to combine the two classes of patients in one institution. It is not helpful to alcoholic patients, at least."

Dr. Wm. P. Spratling, superintendent of Craig Colony for Epileptics, says: "In an accurate analytical study of the causes of epilepsy in 1,070 cases at the colony, we found that 15 per cent of these were due to alcohol in the parent."

Dr. Charles G. Wagner, superintendent of the Binghamton, New York, State Hospital, writes thus concerning the institution when it was used as an inebriate asylum: "It appears to have been quite popular for a time, and had a considerable number of patients, but the management of the asylum had no legal control of the patients, and consequently they left the place at will and obtained liquor to satisfy the cravings of appetite. For several years after 1870 the existence of the institution was precarious, and I think it was about 1875 that it was closed.

"After that two fires did extensive damage. In 1879, the state having contributed more than \$100,000.00 to the construction of the asylum,

satisfied other interests and took over the property for the purpose of an asylum for the insane."

Dr. V. A. Ellsworth, of the Washingtonian Home, Boston, Mass., says: "I am very much in favor of state institutions and private asylums for the cure of inebriates. * * * About 37 per cent which come under our care are curable and are restored back to society well, healthy men."

XX

THE MEDICAL INSPECTION OF SCHOOLS

BY HENRY MATTHEY, M. D., DAVENPORT, member State Board of Health....

It is one of the most laudable duties of the State to care for and protect the health of its citizens. For this purpose there has been established our State Board of Health, which has for its object the suggestion of laws and regulations which shall control or eliminate those conditions and causes which scientific investigation have proven injurious to the welfare of the people. That the State should add constantly to the number of its sanitary regulations is not only of enormous importance but of great practical value as well, for it is due to these manifold hygienic measures that a large number of diseases which are prone to develop because of the social communion of mankind is either entirely prevented or their extension limited.

In order to demonstrate the magnitude of the field of activity of the State Board of Health it is only necessary to point out the following matters which receive its attention and consideration:

The prevention of the adulteration of foods; prophylaxis against epidemics; disinfection; vaccination; hygiene of commerce; e. g., inspection of oil for the use of miners, regulations for the employment of petroleum and gasoline; inspection of milk and drinking water; inspection of live stocks and meats; prevention of the transmission of diseases from the lower animals to man; medical statistics, including records of births and deaths; and rules concerning the burial, unearthing and transportation of corpses.

It will be seen to how great an extent the State is mindful of the health of its people, but further problems still confront us, to which insufficient consideration has heretofore been given.

The inspection of schools by regularly appointed and salaried medical inspectors is a subject as yet in its infancy, but one which must be regarded as second to none in the vastness of its possibilities, in the incalculable value of its results when efficiently carried out, and in the financial saving to the purse of the State. It need hardly be said that the school room is frequently the hot-bed of epidemics; the source of per-

nicious habits detrimental to health; the operating cause of physical deformities and the incubator and distributor of parasitic affections. Certainly these facts are too patent to require emphasis. The experience of every physician has taught him to appreciate their truth and significance.

Let us labor under no misunderstanding. If we believe that the abolition of school-room evils is a light and pleasant task to be accomplished with the utmost facility, let us undeceive ourselves promptly.

It is essential, among other things, that the teacher should be sufficiently trained in this particular respect to enable him to co-operate with the medical inspector for the good of the school and the community. It might, with propriety, be suggested that this branch of knowledge be introduced into the curriculum of the training school and into the examination for the license to teach.

The duties of the school physician are manifold. It is for him to determine the condition of health of teacher and scholars, and to execute all necessary precautions and measures to maintain a sanitary school. It is his duty to diagnosticate all existing afflictions and to direct the attention of parents or guardians to the disease with a view toward its proper treatment by the family physician. His services will be particularly valuable in connection with the early detection of acute infectious and contagious diseases; chronic constitutional infectious diseases (tuberculosis); local communicable affections (cutaneous disorders, parasites, inflammatory eye troubles); epidemics, with especial reference to the source of infection, the duration of the contagious period and the method or means of communication; as well as the prompt isolation of the sick and the protection of the exposed.

The skill of a physician is requisite also in the recognition of such bodily infirmities, deformities or malformations as will need special consideration during actual attendance upon school duties, as ocular, aural or nasal disorders, spinal curvatures, phimosi, anaemia, etc. All children, on entering an institution of learning, should undergo a thorough physical examination by the medical inspector, barring from this measure only those who present a certificate from the family physician, which shall explicitly state the condition of the child's organs as determined by a reasonably recent examination, carefully made.

The medical inspector shall furthermore devote himself to the question of the child's actual environment; the school building, its heating and ventilation, its water supply and sewage disposal, the kind and character of the benches with relation to the posture habitually assumed by the child; the play-ground, its soil and drainage; the water-closets, their cleanliness and ventilation; and even the games and athletic exercises indulged in by the children with regard to their abuse by those afflicted with cardiac or pulmonary defects.

The closing of schools, which has in times of past epidemics become a public necessity, will, by virtue of a medical inspector's watchful control, be forever abolished.

It requires nothing more than this incomplete enumeration of the subjects which lie within the province of the inspector to convince us

how inadequate are our present methods. In Boston, New York, Chicago and other larger cities a thorough system of medical inspection of schools is already in force, and the results achieved are nothing less than marvelous. The report of the medical inspector in Boston for the year 1902 shows that 18,285 children were examined, and only 3,793 found free from disease. Of the balance 326 were afflicted with specific infectious diseases, 1,924 with oral and respiratory disorders, 105 with diseases of the ear, 547 with diseases of the eye, 3,795 with diseases of the skin, and 7,795 with miscellaneous diseases.

Minnesota, Pennsylvania and some other states have already made considerable strides in the direction of improvement in school-hygiene, and in no instance have the results been otherwise than satisfactory.

In order to make the office of medical inspector of schools worthy the ambition of well qualified and conscientious men, an adequate salary should be connected therewith. It is evident that the entire time and activity of the physician are necessarily involved in the proper execution of his duties, and his salary should be compensatory to a maximum degree, the more so since the State will retain in its coffers the moneys now too frequently expended for those very conditions and circumstances which a system of school inspection would obviate. Able men, conscious of their responsibility, and impressed with the importance of care and skill in their labors, would thus stand as a living credit to their State and a blessing to the community.

We trust that the great commonwealth of Iowa will awake to a full realization of its needs in this respect, and that from its State Board of Health may emanate carefully prepared suggestions to be made into laws by the legislature at its next session, whereby every county within the State's confines is obliged to inaugurate a systematic medical inspection of its public schools. It will remain for the near future to behold the unfailing benefits of such a measure, and to thank the cause of medicine for its efforts in behalf of it.

XXI

PLAN AND PLANT*

BY PROFESSOR THOMAS H. MACBRIDE, PRESIDENT OF THE ASSOCIATION.

I assure you I highly appreciate the privilege which by your courtesy is mine this evening. It is always pleasant to voice the mutual congratulations of people who meet to rejoice in the progress of a good cause. It is pleasant to tell of success, to record encouragement, to point the way for wider effort and even to go over again the old arguments which determine for us, at least, the line of duty.

And surely we have tonight great encouragement, and our success—has it not been conspicuous in every way? What public movement ever met more cordial welcome at the hands of an appreciative public? Who is there who understands our effort who does not bid us God-speed? We have the unanimous support of the newspapers of our State. One enthusiastic friend declares our present endeavor “the most important now before the people of Iowa.” The effort to make our cities, our towns, our homes, wherever they are, clean and beautiful, and thus sane and healthful and happy, is something that commends itself to every citizen in the mere statement of the case. Iowa is so fertile, its soils lend themselves so easily to the horticultural and arboricultural interests of men that we may more speedily here than elsewhere transform to noble purposes the face of nature. The people have already tried it and are therefore the more ready to push forward.

In the matter of membership we have every reason for encouragement. So far as can be learned, not a man invited to become a member of our association has refused, and it is certain that could the matter be brought individually to the attention of people our membership would reach a thousand in a day; would reach thousands at once could we but appeal to but a fraction of those whose sympathy and interest are at this moment ours. Instead of one meeting a year we should then have not less than four, one in each quarter of the State; our report, instead of appearing once in a year, would be a quarterly, would be in the hands

* The annual address before the Iowa Park and Forestry Association.

of every councilman, every county supervisor in the State of Iowa and the streets and highways of these prairie counties would come forth like the paradise of the king! Our people are eager for information; the schools are not giving it, perhaps cannot, it remains for voluntary effort to carry everywhere those simple suggestions and first principles on which all rational civic improvement rests. We must have at least ten members in every county in Iowa; we can easily have them, if some one will only act in every town as promoting agent of this association.

There is also progress in the matter of parks in all our towns. I know of no town that does not manifest increased interest in the subject. Better streets, better paving, better planting, wider outlook and purpose may be noted in every town in Iowa today. As for parks, something is certainly doing. Des Moines will one of these days, notwithstanding high water and all sorts of discouragements—thanks to the energy of her commissioners and the spirit of her people—have one of the finest park and boulevard systems in this country. I am one who believes that we are all interested in Des Moines. The State should certainly make a park of this whole Capitol Hill. Burlington will never forget the philanthropy of one of her citizens, our lamented friend, Philip Madison Crapo, whose public spirited beneficence in library, park and public hall will bless the people of the Tremont City in the long years of the future—long after the names of those who live for the fame and fireworks of the present have been utterly forgotten. Muscatine, Davenport, Sioux City, Council Bluffs all report encouraging progress. Nor are smaller cities lagging. Waterloo and Cedar Falls have between them what will one day be one of the beautiful parks of the west; Waterloo's great storm-sewer is famous, but its bridge across the Cedar river is deservedly more famous still, since it is the first, as far as I can learn, constructed on the true principles of beauty and permanence at one and the same time. Estherville, in the canon of the School-house creek, has one of the most romantic natural parks along the valley of the Des Moines. Village improvement societies are springing up in every county and town; in Perry, Hawarden, Tama, Iowa City;—we have a constituency, there is no doubt of it, and the time is opportune. It is for this society to so plan and devise as to be able to reach out to every community and lend a helping hand. In every community are enthusiastic friends of parks and fine streets and beautiful public grounds, of fine setting for the school buildings, of better and cleaner homes for the working people, of flowers for the miner and the factory hands; there are plenty of such people; nowhere, relatively, as many as in Iowa; the only question is how to get started, how to help them carry into effect their own noble and generous impulses. Once let people learn that outdoor beauty is easy of attainment, that the fair face of nature shines for the asking, it is free as the gifts of God, that proper outdoor conditions make for public order, public health, public happiness and serenity, which means sound mental and spiritual health—let our people see this once and Iowa will rank first in more things than corn and the produce of the field.

Concerning progress in forestry there is less this evening for me to say. Our people have pretty well used up the original stock of native trees and have not yet felt the need of a new supply. Our old oaks and walnuts stood in primeval beauty for years, while the forests of Minnesota and Wisconsin furnished forth pine for less money than it required to convert our century-old trees into lumber. Within about fifteen years, however, these conditions have changed; pine lumber has become more and more expensive and it has at last become profitable to use the hard woods of our own ravines and river plains. The result has been the almost absolute destruction of the original forest of Iowa. In the meantime the occupancy of the prairie and the easy success of maple groves, planted for shade and protection only, have taught our people tree-planting and have lent every encouragement to the belief that we shall win once more when Iowa farmers plant trees for forest purposes. This, too, is coming. We might, under wise management, have had for our children cheap lumber and cheap fuel forever; but that opportunity is gone. We must pay the penalty now in dearer supply, i. e., in more of toll and labor. But if lumber trees will speedily come anywhere to perfection it will be here; indeed I shall show you presently what has been done in a single experiment at Iowa City.* The time is coming when every farmer will raise trees as a crop as certainly as he does corn. Probably the crop of timber will characterize certain parts of Iowa rather than others, as the crop of corn does, because some parts are less suited for other forms of agriculture, but trees will be one day one of the crops of this State and our people are beginning to realize the fact. Groves we must have; nobody disputes that; they are essential to the well-being of every creature on the farm, and the forestry problem of our immediate future rests upon the question of the amount of wisdom we shall henceforth display in making our plantings. It would seem that western Iowa surpasses eastern Iowa in this particular. The Whiting walnuts are famous over this whole country. There is also a grove in Ida county concerning which the Ida County Pioneer gives most glowing accounts.* The very high price of walnut lumber tempts people everywhere to plant this species. As a matter of fact this is only a premonition. The price of hickory is almost or quite as great. Hard maple and cherry are following close, and it is but a question of a few years when white oak will be in the same list. All these trees grow in Iowa. The better the care and the more suitable the soil, the faster will they come to value. Once started they care for themselves; the owner may sleep and rise, night and day; the trees will presently come to their glory. But there are many other features in the situation which this evening make for our encouragement. People are learning that dirt and disorder are not only unbeautiful and unsanitary, but they are, as a matter of fact, unprofitable. It pays to plant trees, to plan streets, to lay out parks, to beautify the farm; it *pays*, pays in every way, in money, in health, in happiness, pride, satisfaction, joy. Unthrif, disorder, untidiness does not pay. I have here

* This address was followed by a series of stereopticon slides illustrating this and other points in the argument.

a telegraphic dispatch from the Chicago Record-Herald under date of September 23, 1903.

"J. H. Kerwin, president of the Oelwein improvement club, has received a letter from President Stickney of the Chicago, Great Western in which he severely criticises the town. He claims that he was greatly disappointed in the manner in which the streets were kept, that in many places in the best parts of the city the sidewalks are almost hidden by weeds. The letter was received in response to a letter asking his assistance in securing new industries for the town."

Was ever such an arraignment of an Iowa town as that? What could Mr. Stickney have been thinking about? As if any town in Iowa were not good enough for the great railway king! Has he not heard of the "lowest amount of waste land," and "highest amount of corn," the smallest number of paupers and the greatest number of pigs and chickens, and kine? the finest delegation in Congress and the choicest lot of statesmen elected to stay at home?—has Mr. Stickney never heard of these things? Yea, verily; but at the same time he seems somewhere else to have read: "A man's life consists not in the abundance of the things which he possesses." It is not possession, evidently, but the ability to use, that in Mr. Stickney's view counts for real excellence and worth. Iowa is wealthy, no doubt, but what are we doing with it? Are you making it every day more beautiful and fair, are its streets and highways every day more orderly and attractive, its homes neater and cleaner and more healthful, better nurseries for the great people that is yet to be? If not, in Mr. Stickney's view, added wealth and multiplied factories can avail us little. Our communities have, some of them, yet to learn that the prosperity of a people doesn't always hang upon the gifts of great corporations. The long-distance telephone crosses our State, but what return does it make to the farmer for the shade trees that once adorned his holding, now mutilated and destroyed? What return to the village homekeeper, for the unsightly poles that vex his street? What return to the people themselves for the long file of poles that blocks the highway? Many a village has factories, but what compensation to the resident for the filth and squalor and barbarism that so far seem to be the inevitable concomitant of the factory quarter? It is not a question whether our towns are suitable places in which a few men may make fortunes in order to spend them in luxury elsewhere, but it is a question whether our towns and villages are suitable places for the homes of the thousands of our people, where they may live in quiet and happiness and physical, intellectual and moral health; whether, in fact, the physical conditions in our towns are such as promise the perpetuity of the republic.

"Zierlich denken and auss erinnern,
Ist das Leben in tiefsten Innern."

To feed the mind on that which is fair, and fill the hall of memory with imagery sweet and pure, this is *to live* in sense profound!

* See Ida Grove Pioneer, July 4, 1901.

Such was the wisdom of Goethe; such must be our wisdom if we continue as a people. It is for reasons such as these that rural living has always possessed a special charm in every age. Towered cities and the busy uproar of the darkened street please us only because these are a necessity of commercial life. The homes of the people, if the people are to be sane, must be far remote from all this. Fancy the condition of thousands of people in such places as the First ward of Chicago, where the children of the republic are bred in cellars, in dungeons, in garrets, behind and over shops and stores and all unholy places. The mere mention of the situation condemns it instantly. All experience, all history, proves that no people can remain sound, and healthful, and happy, into whose lives come not largely the spirit and the breath of rural peace and purity. The drift toward the city is for commercial gain; the drift toward the country is for life and health.

Now our Iowa towns are practically all rural. Most of them are open to all the world. The wind of the prairie sweeps through them from side to side, and it is to our great encouragement that our larger towns, even many not large, are rapidly building out and establishing at the same time such sanitary conditions—waterworks and sewerage systems—as shall make them comfortable beyond all places in the world. It remains for us only to insist upon open-air living, and the constant fostering of that which makes for natural beauty and cleanness, and we shall have gone far to recover a lost Eden. Eden was and has been, in all the traditions of men, a terrestrial paradise, and a paradise is an open park.

But, says one, you would have us all lapse into some patriarchal era; you make of Iowa a sleepy hollow, fit residence only for the Van Bummels and Rip Van Winkles. Not so, at all. We would simply apply to our physical surroundings the same good judgment and skill and science which we devote to the development of other resources of this fortunate country. Streams and groves and birds and landscapes are just as much a part of the natural wealth of Iowa as are mines of lead and coal, quarries of rock and prairies of fertile soil. We should justly condemn the man who in his haste to secure the rock for building himself a house should so fill the quarry with debris as to make it thenceforth unserviceable to men; and in the same way and for the same reason we condemn the wrong use of spring and grove and river and forest, or even of a single splendid tree. We plead the rights of the many as against the thoughtlessness and selfishness of the individual or the few. No man has the *moral* right to blot or mar or destroy that which brings comfort or pleasure to his fellow men, even though his *legal* rights in the case be perfectly clear. On the other hand, for each noble soul the joy of true living lies in witnessing the happiness of others, especially where to contribute to that happiness has been in any way his own high privilege.

The movement for better country highways, the good roads movement, so-called, is to our aid and along the lines of our endeavor. In most parts of Iowa there is at hand material for road-making; rock in the east, gravel in the north and west, but in all ordinary seasons, even

well shaped roads will be usable in a high degree. Could traffic be limited to the graded and finished center of our sixty-six-foot roads the sides would soon be parked with blue grass and, where not turned over to the telephone lines, planted with trees to the great adornment of our country drives and landscapes. But there is still another encouraging feature in the present situation, as I view it. For some years it has been constantly asserted that civic improvement in Iowa was destined to be very slow progress because of the instability of our people in the matter of habitation. Those who have hitherto owned farms and have brought them to a certain pitch of improvement have been leaving them in large numbers to find home and residence in the neighboring village and town, and have thus given place to people less zealous in caring for the artistic appearance of farmstead and country lane. Strangely enough, it has at the same time been the fashion to complain of "farmers who move to town," that they are non-progressive and stand in the way of the creation of parks and boulevards. The two statements refute each other, but I intend to refute this last assertion, in part at least, by showing presently what our farmers, even now, are doing; and I believe that in any event the migration spoken of is no longer likely to be anything like so general as heretofore. The ebb has begun already. The beauty and healthfulness of open rural life has by no means gone unappreciated of our every-day farmers and residents in the country generally, but there have been hitherto several manifest disadvantages in rural living—the isolation of it, the absence of many modern conveniences, such as the daily mail, public transportation, public light and water. Now by our telephones, interurban railways and artesian waters, all this is changed. Isolation is a thing of the past; the mail service is almost as good as in the residence parts of the city and better than in smaller villages and towns. The gasoline plant, with the Welsbach mantle, lights the farmhouse better than city homes are ordinarily illuminated by the public system; so that as a matter of fact our farms are fast becoming suburban, and the same tendencies that have in all the years tended to make beautiful the homes and streets of the suburbs of our better cities will henceforth operate to make better our country highways and farms. When the street car passes the door the man five miles out is quite as much in town as if he lived in a ward and was ruled by ward politics, paying in extreme taxation the highest sort of a price for what is often the sheerest tyranny and oppression. The farmer will no longer complain of isolation; rapid transit rectifies all this, so that we may expect to see in the passing years more and more the habits of our people becoming stable and the whole landscape brightening by reason of the increased comfort and convenience of what we call our rural population.

The beauty of California as a place of residence lies largely in this: that everybody lives on a farm and yet no one lives remote from the principal street. The cultivated area is comparatively small, but the highways are wonderfully kept and the people vie with each other to make beautiful lawn and garden and park. Now Iowa always was and always will be tenfold as rich in resources that are inexhaustible as California, even though her mountains teem with forest and hide, all precious

metals in their scarred and glaciated valleys. The wealth of these prairies has never yet been tested. When once we begin to realize the returns, the imperial returns of which our soils are capable and see a population of millions where we now count hundreds of thousands, many of the difficulties of our present situation will have passed away. Let us hope that those millions may come to homes of happiness and beauty because of the wisdom of those who toll and plan today.

You will observe that in all that I have set forth so far the argument is philanthropic. Our encouragement in this work lies also in the very fact that in every community are those who sincerely seek the welfare of their fellow men. Heretofore we have striven to give to our people—to all comers, indeed—lands and homes and schools. These possessions our institutions secure to all who are worthy. This was well. All things in their order. There is no use talking about a beautiful street until we have a good street and a clean street; then we go on to make it beautiful. Fortunately the first two almost insure the third. There is no use talking of parks until we have homes and streets by which we may reach them. There is no use of talking of gardens and plantings until the children are housed; but, now that in Iowa we have all these things, we are simply inexcusable if we go not forward along the path, the shining path of human progress. Considerations of profit, health, patriotism, civic pride, philanthropy, personal comfort, all summon us and bid us forward.

It is not for me at this time and in this particular place to suggest the work of the coming year for this society. I will simply say that inasmuch as our whole present effort is the stirring of public sentiment, each member of this association becomes in his own community an agent to forward our purpose. There should be a village improvement league in every town in Iowa, and in every rural community sufficiently enlightened to support a church or school, and the member of this our Iowa Park Association should, if need be, organize and head that league.

Ladies and gentlemen, the one pre-eminent accomplishment of the age in which we live is the rediscovery of the natural world. For centuries men turned away from Nature as with a shudder. They peopled her dim recesses with the spirits of darkness and stood in awe at the more sublime manifestations of her power—the black forests, the mountains unscaled and unapproachable, the tossing of the majestic sea as it roars about its boundaries forever. For thousands of years men shunned what we now love. Only within a century have men looked with complacency upon the woodland and the desert. Indeed the history of all human culture would indicate that man was first of all enamored with himself, so interested in his own perfection of form, his own virtues, struggles, passions, vices even, that art was for all the years almost entirely anthropomorphic. Men, almost without exception, were blind to the glories of the natural world as Nature spreads them forth. They knew how to carve in marble each linament of the human body, to paint the face of kingly triumph, to delineate the furrows of despair, but no Grecian or Roman artist seems ever to have discovered the gladness of a forest, the pencillings of a flower or the soft whiteness of a lotus

breathing out its fragrance beneath the moon and the stars. Only the Master saw the beauties of the lily, but his disciples never thought of obeying him when he bade them consider it; only the Hebrew shepherds saw the glory of the nightly heavens as filled with song. But in all the centuries art, which in every age is the highest expression of human attainment, art has never until our own times turned to the external natural world in any real appreciation. We have reared our temples and palaces and wrought our tapestries and covered the walls of our galleries with color, and carved our marbles, all unmindful of the greater glory of the domes and palaces of God; we have been children satisfied with toys. For surely never was painting equal in color or in richness to that landscape by the river, whether at dawn, when the sun glids the fleeing mists, whether at noonday, when the light pours in silent splendor, touching with glory every stick and humblest thing, whether it flood the new voiceless grove or spread on the motionless bosom of the water, where the lone kingfisher from his dead-tree perch watches his azure image—no painting can match such splendors spread over all the world. No altar in the east, with lighted tapers tall, and vaulted ceiling, can rival for a single moment the sun when he rises above our Iowa prairies; no rose-window in the west burns with the colors of our sunset sky; no temple-arch like those that span our woodland aisles, no columns like the shafts of rooted trees.

But these pictures of Nature are visible from the hills of Dubuque, of Burlington, of Sioux City, of Des Moines, and by all the rivers and streams of this, our happy State. To summon people to their appreciation and enjoyment is the present function of this association. Plan and Plant!

XXII

A COMPEND ON MILK

BY G. A. JOHNSON, D. V. M., SIOUX CITY, IOWA

MR. PRESIDENT AND GENTLEMEN:

It is not without considerable embarrassment that I present for your consideration a few thoughts upon the subject of milk. My misgivings are because of my inability to treat the subject in a manner commensurate with its importance.

Milk! how familiar the word sounds. How common an article of food it represents. In fact it is so common that its value and importance are rarely fully appreciated. It is important because it is the most commonly used article of food in the world. It is practically the only food of all young mammals. It enters largely into the dietary of all civilized and many barbarous people, and no other article of food is productive of more good or greater evil, according to its condition, than this God-given food, milk. As the fond mother caresses her babe to her breast she lovingly gives of herself for its support and development as much as though it remained *in utero*, yet how many appreciate that she may be at the same time sowing seeds that may cause untold misery or death.

The subject milk is of such magnitude and made up of so many phases that a paper suitable for an occasion such as this must of necessity either be confined to one particular phase or to very briefly consider a few only, of the more important ones. I have chosen the latter, and while I do not anticipate presenting any new facts I hope that I may be able to present some of the old ones in such a manner as to form a basis of discussion, and thereby awaken a new interest in this field. From the vast number of phases of the question I have chosen the following:

1. Milk as a secretion.
2. Milk as a food.
3. Milk as a medium for germs.
4. Pure milk.
5. The commercial production of milk.
6. The handling of milk.

7. Milk as a factor in disease.
8. Sterilization and pasteurization.
9. Milk inspection.

As cows' milk is the only kind that is handled to any great extent commercially in this country, it will be the only kind considered, unless otherwise stated.

MILK AS A SECRETION

Milk is as purely an animal product as is the flesh, and its secretion is a complex vital function, performed by the mammary gland. It is termed a secretion with the idea that the cells of the gland take only certain substances from the blood and, putting these together, pour them out into the lacteal ducts as milk. But the very act of secretion also implies the act of excretion. This phase of the question is very often, in fact usually, overlooked, yet it is easy of demonstration. It is a commonly known fact that milk will contain the odor of such plants as garlic, onions, turnips and many weeds when they are fed to the milking animal. Prof. Lindsay says:

"(1) It is clear from our experiments that food does influence to a noticeable degree the composition of the butter fat and the body of the butter.

"(2) From a quart to a quart and a half of linseed, or cotton seed oil, added to the regular feed will slightly increase (.004 per cent) the percentage of the fat of milk, with the result that the butter product from such milk is softer and more yielding than that from standard food. You are all aware that nursing mothers frequently cause digestive troubles in the child by eating certain foods, though they agree with and are relished by the mother; they so alter the milk that it does not agree with the child. In certain diseases the milk is more or less altered in character and appearance, as in aphthous fever, (3) it has a yellowish white coloration and a mucous consistency similar to that of colostrum, and a very disagreeable taste."

In the practice of veterinary medicine it is not uncommon to successfully medicate the young through the milk of the dam.

These facts would seem to demonstrate beyond question that the mammary acts as an excretory gland to a greater or less degree.

The function of the mammary gland is quite sensitive to nervous impulses, or any disturbances of the equilibrium of the animal produce more or less marked changes in the milk secretion. These are very important questions in the production of good, wholesome milk, especially is this true as regards the question of food. Yet it is one that receives comparatively little consideration by the public.

The milch cow should be considered simply as a machine (complex though it is) for transforming raw material (food) into a finished product (milk). And it is unreasonable to expect that the finished product will be first-class in quality when the raw material is of poor quality, or the machine is defective. In other words, no cow can produce first-class milk from poor food; neither can an unhealthy cow produce healthy milk

from the best of food. And the point that I wish to emphasize is that in order for a cow to produce pure, wholesome milk she must be healthy, she must be handled cleanly and carefully and receive good, pure, wholesome food.

MILK AS A FOOD

Normal milk is an "opaque whitish liquid secreted by the mammary gland of female mammals for the nourishment of their young." It (4) contains all of the ingredients needed for nourishment, that is, it furnishes the materials which build up the body and keep it in repair, and also those which supply it with fuel to keep it warm and to furnish the animal machine with power needed to do its work. It is not practical, if possible, to rear young animals without milk in some form. And it is customary among man and the domestic animals, whenever a mother cannot suckle her young, to substitute some other milk for hers. For, as yet, no other substitute has been found that will successfully take the place of good, pure milk in the rearing of the young, or in the sick room.

The constituent parts of milk differ more or less with the different species of animals, and at different stages of the lactiferous period, also in the same animal at different times, and all tables of milk analysis differ more or less, but for practical purposes the following table may be taken as a standard:

COMPARATIVE (5) COMPOSITION OF VARIOUS KINDS OF MILK

Kinds of Milk.	Water.	Total solids.	Total Solids						Fuel value per pound, color.
			Protein			Fat.	Carbohydrate, milk, sugar.	Animal matter, ash.	
			Casein.	Albumin.	Total protein				
Woman	87.4	12.6	1.0	1.3	2.3	3.8	6.2	0.3	319
Cow	87.2	12.8	3.0	.5	3.5	3.7	4.9	0.7	313
Dog	75.4	24.6	6.1	5.1	11.2	9.6	4.9	0.7	671
Ewe	80.8	19.2	5.0	1.5	6.1	6.9	4.9	0.9	503
Buffalo	81.4	18.6	5.8	0.3	6.1	7.5	4.1	0.9	506
Cat	82.1	17.9	3.1	6.0	9.1	3.3	4.9	0.6	400
Goat	85.7	14.3	3.2	1.1	4.3	4.8	4.4	0.8	365
Llama	86.5	13.5	3.0	0.9	3.9	3.2	5.6	0.8	312
Ass	89.6	10.4	10.7	1.6	2.3	1.6	6.0	0.5	222
Mare	91.5	8.5	1.2	0.1	1.3	1.2	5.7	0.3	180

Thus it is seen that milk is composed of about 87 per cent water and 13 per cent are solids, of which protein forms about 25 to 30 per cent; fat, 30 to 35 per cent; carbo-hydrates (sugar), 35 to 45 per cent; and ash, 2 to 3 per cent. A brief comparison between woman's and cow's milk may not be out of place at this point.

According to the above table it will be seen that the per cent of water and solids in the two kinds are about the same, but the composition of

the solids is quite different, the greatest difference being in the casein, woman's milk having but one per cent and cow's has 3 per cent, while the curd of cow's milk is quite firm and solid, that of woman's is lighter and flocculent; these two conditions will possibly account for the fact that cow's milk in its pure state usually does not agree with the infants; the curd that forms is too large and too firm for them to digest. Again, woman's milk contains more albumin, which would probably render it more laxative. It also contains more milk sugar, which makes it more productive of heat. To render cow's milk approximately the same as woman's, take one pint of pure, wholesome cow's milk and add twenty-seven ounces of sterile water, one ounce commercial lime water, two ounces by weight of milk sugar, one to one-half ounces of pure cream and one-half ounce of albumin; the white of an egg beaten up with the sugar so as to mix with the fluid may be used for the albumin. This will make three pints of milk. This should be put into bottles plugged with cotton, a separate meal in each bottle, and pasteurized, and then kept on ice until ready for use, when it can be brought to the desired temperature by setting the bottle in warm water. If the cream has risen it may be mixed by gently rotating the bottle from end to end. Too violent agitation might cause more or less of the fat to collect in chunks. This method gives better results than to make the mixture fresh at each meal time. In such a combination there will be a very small per cent less of casein and albumin and more of fat and sugar than given in the table, but on the whole it will be quite similar to woman's. But these proportions could easily be modified according to the indication. The use of the small quantity of lime water renders the casein more flocculent, consequently more readily digested; besides it furnishes an unusual amount of bone producing material. The custom of adding two parts of sweetened water to cow's milk makes a compound deficient in albumin, fat and ash; consequently it is lacking in the nutritive and bone producing properties that are so essential constituents of foods for the young. A combination of cream, sugar and water would lack the normal amount of casein, albumin and ash. Normal milk being a natural food, may be termed a typical balanced ration. And it varies in the different species to correspond to the natural requirements of the species obtained, when necessary to substitute one kind for another, that such substance be made as near the natural as practical.

The relative food value of milk is not fully appreciated by most people. Few, indeed, realize that one (6) quart of good milk contains about as much nutrition as three-quarters pound of beef steak, and at the present current prices, five cents worth of milk is equal to ten to fifteen cents worth of beef.

The great objection to milk as a food for healthy adults is its bulk, but with the infant and the sick, where only a limited amount of food can be taken at a time, and where large quantities of water are necessary, no substance has been found that successfully fills the place of milk, for it furnishes the water and the nutrition. There are several prepared foods that are advocated as substitutes for milk, among which are: Horlick's malted milk, which is reported to be a mixture of dessi-

cated milk 50 per cent; wheat flour 26¼ per cent; barley malt 23 per cent, soda bi-carbonate three-quarters per cent. It contains no unaltered starch when mixed. "Nestle's milk food," a mixture of dessicated swiss milk, baked wheat flour and cane sugar 30 per cent. More than a third of the total amount of carbo-hydrate is in the form of starch. Mellin's food is a completely malted food, all the carbo-hydrates are in a soluble form. It may be regarded as a dessicated malt extract. The analysis of these foods as compared with human milk is as follows:

	Water.	Protoid.	Fat.	Carbo-hydrate.	Mineral matter.
Dried human milk	0.0	12.2	26.4	52.4	2.1
Horlick's malted milk	3.7	13.8	3.0	76.8	2.79
Nestle's milk food	5.5	11.5	4.8	77.4	1.30
Mellin's food	6.3	7.9	trace	82.0	3.3

These foods are composed very largely of carbo-hydrates and are quite deficient in fats and protoids, except Horlick's, which has more protoid than dessicated milk. Their chemical composition is certainly very different from that of milk.

MILK AS A MEDIUM FOR MICRO-ORGANISMS

The nutritive value of milk is not confined to the larger animals for it is equally as good a food for a very large number of vegetable micro-organisms, which for convenience will be designated as bacteria, in fact nearly if not all bacteria grow well in fresh milk, and there are something over 200 (7) species of bacteria that infect milk so commonly as to be termed dairy bacteria, the majority of these are rarely found except in milk or milk products. Then add to these a considerable number of the pathogenic germs that too frequently find their way into milk, such as the tubercle bacillus, the bacillus of anthrax diphtheria, typhoid fever, cholera, scarlet fever, etc., and you may form some conception of the vast number of these pests that have been found in milk.

During the last few years much attention has been given to dairy bacteriology and it has been found that some of these species are rare while others are almost universally present. The toxins produced by the vast majorities of these bacteria are practically harmless, while in others it is exceedingly dangerous, as tyrotoxin. Again some species may be harmless in small quantities but detrimental or harmful when present in large numbers. It has been ascertained that certain species produce a better flavor especially in the butter and cheese and some butter and cheese makers inoculate their cream or milk with pure cultures of these species to assist in the ripening process and give them special flavor. It has also been ascertained that the ordinary commercial milk contains from 50,000 to as high as 35,000,000,000 bacteria per c. c. According (8) to German authority (Bitter) milk becomes unwholesome when it contains more than 50,000 bacteria per c. c., yet it

is a fact that a majority of the milk that is sold by milk venders contains from 50,000 to 500,000 or over bacteria per c. c. "For (9) instance Sedwick & Batchelder report 61 samples of Boston milk which contained from 30,000 to 4,220,000 bacteria per c. c. Loveland & Watson of Middletown, Conn., found the milk to contain from 11,000 to 85,500,000 bacteria per c. c. At Madison, Wis., milk was found to contain from 15,000 to 2,000,000 per c. c." Of 32 (10) samples of commercial milk examined in the city of Washington by E. A. de Schweinitz, the bacteria ran from 2,500 in one sample (only) to over 115,000 per c. c. in several, with an average of 61,886, or practically 62,000 per c. c. Later Dr. W. H. Park (11) of New York City working along similar lines carried out a series of investigations to show the effect of cleanliness and low temperature upon bacterial infection of milk, samples were taken under various conditions, kept 48 hours, then examined with following results:

1st. When very reasonable means of cleanliness were observed and the milk cooled to 45 degrees Fahrenheit in one hour averaged 11,000 bacteria per c. c.

2nd. Dusty barns, cow's side and udder casually brushed off and the milk cooled to 45 degrees Fahrenheit in two hours averaged 75,000 bacteria per c. c.

3rd. Dirty cows in ordinary barns, udders casually brushed, etc., in winter 210,000, and in warm weather 680,000 bacteria per c. c. respectively.

The influence of temperature was well shown by the results obtained by allowing portions of the same specimen to stand for 24 hours and 48 hours at different temperatures. The specimen contained 3,000 bacteria per c. c., at the beginning of the experiment. Specimens kept at temperatures below 50 degrees Fahrenheit presented no marked changes, but at higher temperatures most astonishing growths occurred at the end of the 24 hours, that at 60 degrees Fahrenheit, 180,000; at 68 degrees Fahrenheit, 450,000; at 86 degrees, Fahrenheit, 1,400,000,000, and at 95 degrees Fahrenheit, no less than 25,000,000,000. At the end of 48 hours the specimen kept at 60 degrees Fahrenheit had increased its bacterial content from 180,000 to 28,000,000, and at 68 degrees Fahrenheit from 450,000 to 25,000,000,000. Of 20 samples of commercial milk taken on its arriving in the city he found that they contained from 52,000 to 35,200,000,000 bacteria per c. c., and samples obtained from the poorer tenement districts they averaged in midwinter 1,977,692, and in September 15,163,600, and from the more well-to-do districts in midwinter 327,500, and in September 1,061,400.

What contrasts! What volumes these figures speak in favor of cleanliness and a cool temperature in handling milk. Thus we see that in 19 of the Washington and all of the New York samples of commercial milk the number of bacteria ran above 50,000 per c. c. And according to the German standard 60 per cent of the Washington and all of the New York City milk was unwholesome.

Did it ever occur to you that the number of bacteria in commercial milk often runs higher than it does in ordinary city sewage (12) which

Sedgwick found to be from 100,000 to 4,000,000 bacteria per c. c.? But it is a fact nevertheless, yet people often wonder why milk will not keep its normal state for a longer time. Among some of the more common changes that are produced in milk by bacteria may be mentioned (13) souring caused by the lactic acid forming groups, ropy and slimy milk caused by the viscous group, fermentive changes caused by the rennet or triptic group, colored or pigmented as red, yellow and blue milk caused by the chromogenic group, and others that changed the odor and flavor as sweetish, bitter, tainted, etc. And often the effect of one bacillus is counteracted by another so that the milk may be more or less deteriorated and yet not present the characteristic changes of either group.

PURE MILK

Strictly speaking pure milk would imply that it should be free from foreign substances, and from healthy, well kept and properly fed cows. That it should be sweet, of pleasant odor and free from germs. But owing to the manner in which cows must be kept and the method of milking it is found very difficult if not impossible to get it germ free, yet with care and cleanliness the extent of contamination may be limited but care must be given to the surroundings of the cow or the udder may be invaded by dairy bacteria, as demonstrated by Professor Ward (14) in a recent set of experiments. The bacteria probably gain an entrance to the udder through the teats of cows that are kept in foul dirty barns, or of cows that are allowed to stand in stagnant water that covers the udder. These conditions could be obviated by a little care.

THE COMMERCIAL PRODUCTION OF MILK

The production of commercial milk is a business of vast proportions in this country. The majority of dairymen are fairly honest as the term goes today, and the fact that they deliver an impure article does not signify that they are maliciously dishonest, but rather that they are not well informed regarding the scientific principles governing the production of milk. It may be said that the public are more or less to blame for this condition. Milk is such a common commodity that the majority of people do not give it the attention that its importance demands. A great many demand the largest quantity for the price and are satisfied if it produces a reasonable amount of cream and will keep sweet for 24 to 48 hours in the kitchen or an old ice box, and what are the results; the dairymen, ignorant of the principles of milk production will try to produce the largest quantity of milk possible for the least amount of cost by using the cheapest feed, get along with as little help as possible, keeps his cows in close, warm, dirty stables, has no milk room, sets his cans around the barn while milking, has his wife wash and take care of the utensils in the kitchen. If the milk produced under such conditions does not keep well (and it is not likely to, especially in warm weather) the unscrupulous dairymen will add a little or more preservative, and if it is too deficient in cream he can add a little from the milk that he has left from the day before. If the color is not good

he can add a little annoto or other coloring preparation. This will satisfy many and is much cheaper than it would be to have sufficient help to properly care for the cows and do the other work, to build suitable buildings and supply good food, and competition compels others to follow more or less along the same lines. If the public would willingly pay a discriminating price for good milk one great advancement would be accomplished, and it is reasonable to believe that they would if they had any guarantee that they would receive a superior article.

THE HANDLING OF MILK

Sanitary dairying is, as yet, in its infancy, although vast strides have been made in the knowledge of milk and its products during the last few years. Next to having healthy cows the handling of the milk is the most important point, and when it is considered that a majority of the cows are healthy and that a majority of the dairymen and milk venders know little or nothing of the principles of milk infection and are careless in their methods of handling milk, it may be a question if diseased cows rank first in importance, though it is certain that the milk from a diseased cow is diseased milk and it is almost as certain that healthy milk improperly handled will become contaminated. On the other hand it is cited that milk from diseased cows is much more likely to prove deleterious to its consumers than milk contaminated with ordinary dairy bacteria. But the consumer will not be so much interested in how milk is contaminated as he should be that it be not contaminated. What the consumer should demand is pure milk, and he should take no other. And the principle point for the sanitarian is to educate the public to a just appreciation of the importance of buying and using none but a wholesome article. It will be admitted by all that in order to produce wholesome milk the cows must be healthy and the milk must be properly handled. In order that milk be kept as free as possible from germs the stable should be well lighted and ventilated, any work that will raise a dust should not be performed in the barn just before milking. The stable should be as free as possible from dust at the time of milking, the floor should be clean and comparatively dry. The cows should be cleaned with a damp cloth or a milking sheet put on before milking, the milker should be clean, likewise his clothing. The milk should not be allowed to stand in the barn after milking, but should be immediately strained through a cloth and wire strainer and placed on ice in a clean dust-proof room or cooling vat that is properly ventilated and quickly brought to and kept at a temperature of 40 to 45 degrees Fahrenheit. When ready for delivery it should be put into small cans or better glass bottles and these should not be opened more frequently than possible. The milk should be kept at a low temperature while being delivered; during hot weather it should be carried on ice. If cans are used they should be so constructed that no dust or dirt could get into the milk. The delivery wagons should be so constructed as to allow of regular and thorough cleaning. Wooden corks for cans should not be used. All utensils should be thoroughly boiled or steamed every day. If such precautions were followed milk would reach the consumer in a

comparatively pure state. But the dairyman is not responsible for all of the bad qualities of milk, for often these are largely the result of the care which milk receives after it has been delivered to the customer. Many housekeepers will allow milk to remain in an open dish on a table in a hot kitchen where it will absorb more or less of unsavory odors while germ-laden dust is continuously settling into it, and the obnoxious germ-covered flies are free to feed on or drop into it. Under such conditions good milk will rapidly deteriorate, and poor milk will soon spoil. The milk should receive as good if not better care after it is delivered than before.

But let us briefly consider the conditions that frequently prevail at the dairy. The stables are dark and damp, practically without ventilation, and very often filthy. The cows are fed just before milking, thereby getting the stables full of dust, the cows are never cleaned, excrement often hanging all over the hind quarters in chunks from one to two inches in diameter. The large cans are set in the barn and often carried and set along behind the cows. The milker whose clothes and hands are often anything but clean sits down to the cow, and milks without attempting in the least to even brush off the sides or udder of the cow, and during the whole time of the milking dust and dirt is dropping from the sides and udder of the cow and the milker's clothes, into the pail. Added to this a good many of the milkers practice the filthy habit of frequently wetting the teats by dipping their dirty fingers into the milk. When the milking is finished or the pail is full, as the case may be, the milk is put into the large can; sometimes it is strained in and the strainer used for a cover, or it may be strained later. After the milking is finished the larger cans are often set into the common water tank to cool and left there until ready for delivery, in which case the cans are lightly covered, consequently most of the animal odors are retained. In such dairies the milk utensils are rarely boiled and never steamed. The delivery wagons are never washed or disinfected and the inside of many are a sight to behold. Ice is never used and the milk rarely, if ever, gets below a temperature of 65 or 70 degrees Fahrenheit, unless the weather is colder than that degree. Any old kind of can that does not leak, wooden corks and all are used. The milk is usually put into large cans, and a small one that will hold about one gallon is used to carry the milk from the wagon to the houses, and as it is emptied it is re-filled from the larger cans and the milk again exposed to such dirt and germs as may be floating in the air. Again, the measure is not cleaned, or dried, but is thrown in on the cans or carried in the hand from house to house, and being damp it will retain all germs that it might come in contact with, which will be washed out with the next party's milk. Frequently open rigs are used in delivering the milk and often an old dirty, yes filthy, horse blanket is thrown over the milk cans. "Such a sketch can of course but very imperfectly convey to your mind an idea of the carelessness, the filth and unsanitary condition under which more or less milk is produced and handled," but it may possibly afford a framework whereon your imagination may produce a

picture of the condition that a written representation fails to make clear.

MILK AS A FACTOR IN THE CAUSATION AND SPREAD OF DISEASE

While the records do not show that milk is such a formidable factor in the causation and spread of disease in man, yet they do show positively that it may cause disease and that it may be the medium through which pathogenic germs are conveyed from one person to another, and often long distances. And the more the subject is investigated the more evident this fact becomes. It is quite generally agreed by those who have given the subject close attention that the records on this question are very incomplete. The milk may become infected through the cow being diseased, or it may become contaminated after being drawn through a number of well known channels.

Among the diseases that may be transmitted from the cow through the milk may be mentioned aphthous fever (foot and mouth disease), anthrax and tuberculosis, notwithstanding Professor Koch's assertion to the contrary. The (15) milk of cows suffering from paranchymatous mastitis, may cause gastric intestinal catarrh in man. Milk may be contaminated with the germs of any contagious disease of man, and the records show that a number of outbreaks of typhoid and scarlet fever, diphtheria, cholera, smallpox, etc., have been traced to infected milk. Professor Ravenel, M. D., touching on this subject says, (16) Mr. Earnest Hart gives statistics of 50 epidemics of typhoid fever with 3,500 cases; of 15 epidemics of scarlet fever with 800 cases; of 7 epidemics of diphtheria with 500 cases. Taking up the work where Mr. Hart left off Dr. Freeman of New York has collected statistics of 53 epidemics of typhoid fever with 3,226 cases; 26 of scarlet fever with 1,593 cases; 11 of diphtheria with 501 cases, besides two epidemics of foot and mouth disease, 3 of throat trouble, 2 of acute poisoning and 1 of Asiatic cholera, in all about 736 cases. These figures are too low because in many of the epidemics the number of cases were not given, while on the other hand many cases and epidemics are never reported. Usually the milk becomes infected by some diseased person working around the dairy or handling the milk utensils, but it may result from having the utensils washed in an infected house, or from using infected well water to rinse the cans. But probably the greatest amount of disease caused by milk is digestive troubles in infants and invalids, resulting from the injection of milk badly contaminated with dairy bacteria. It has been estimated (17) that one-third of all children die under three years of age, and that contaminated milk is one of the leading causes of these deaths. In order to overcome the bad effects of milk contamination three methods are in vogue.

- 1st. The use of preservatives by the unscrupulous dairyman to make his milk remain sweet longer.

- 2nd. Sterilization, and

- 3rd. Pasteurization where heat is used to destroy or attenuate the bacteria, or in other words cooking the milk.

MILK PRESERVATIVES

Milk preservatives are such substances that when added to milk will prevent the development of germs. Germicides that are not too actively poisonous and will not too materially change the appearance, taste and odor of the milk, may be used as preservatives. The drugs most frequently used for that purpose are formaldehyde, boracic acid, borax, salicylic acid and some of its compounds. It is quite generally conceded that such drugs are injurious even in small quantities when taken for any considerable length of time, hence their use in milk should be condemned.

Again, the careless dairyman is likely to think that if a little is good more is better, and such a person is quite liable to use such quantities as to be dangerous, especially to infants and invalids.

STERILIZATION AND PASTEURIZATION OF MILK

Sterilization means heating the milk to a temperature of 212 degrees Fahrenheit or more, that is, boiling it for a period of ten to fifteen minutes so as to destroy all germs and spores that may be present at the time; while pasteurization means only heating it to a sufficient degree (165 degrees to 170 degrees for ten to fifteen minutes) to destroy or attenuate the germs, but not to kill the spores. While the processes differ in degree rather than kind, the effects on the milk are quite different. The boiling necessary to sterilization coagulates the albumin and the sugar is likely to be precipitated. This changes the flavor of the milk and renders it less digestible, thereby destroying a greater or less per cent of its nutritive value. On the other hand the amount of heat necessary to pasteurize milk is not sufficient to cause any perceptible changes in it. There is at present more or less controversy regarding the effects that pasteurization has on the milk. A number of investigations claiming that it destroys digestive prements, and thereby reduces its nutritive value fully 2 per cent. If the degree of heat is not sufficient to produce chemical changes in the milk but leaves it practically in a natural condition why should it affect the nutritive value? If such are the facts it would seem that this position is not well taken. Of course this would not hold true in case the bacteria had been at work long enough to have affected changes in the milk or produced considerable amounts of ptomaines.

In order to obtain the best results from pasteurization it should be done soon after the milk is drawn. As soon as it has been freed from the animal odors the milk should be put into small receptacles, glass bottles with tight seals of the pint and quart size, are probably the most practical, and these placed in the water bath and brought to the proper temperature for ten to fifteen minutes. Then they should be rapidly cooled to 45 degrees Fahrenheit and kept there until ready for use. If subjected to such a process the milk will be in practically a natural state and should be of normal digestibility and nutritive value. But milk protected by either of these processes will become re-infected

upon exposure, therefore it is necessary to keep it tightly sealed until ready for use. But if pasteurized milk cannot be procured on the market it should be subjected to this process in the home as soon as possible after being received, especially such as is to be used in feeding infants or invalids. And it would be good prophylaxis to re-pasteurize all milk intended for such food just before using so as to destroy such germs as may have survived previous pasteurization. To be sure some will object to such a procedure, pleading unnecessary expense and labor. But sufficient apparatus can be procured at a very small cost, and the labor should be that of love rather than a duty. And the physician who neglects to urge his patrons to take some such precaution falls short of his full duty to those entrusted to his care, and humanity in general. From the preceding it might be inferred that I wish to discourage the use of milk, nevertheless such is not the case. I sincerely believe that the use of milk should be much more general under proper conditions. I would much prefer a glass of good wholesome milk at meal time to a cup of tea or coffee. But I, like a vast horde of others, do not use the milk because I cannot often get a good quality. We have in milk, when in its normal condition, a natural wholesome, nutritious, easily-digested food, that ought to largely take the place of many of our stimulating beverages. But its most commendable features render it easy of contamination and very susceptible of deteriorative changes. There is much more danger in the use of milk of an unknown origin than other animal food products, because of the ease with which it may become contaminated, and from the fact that it is largely used in the uncooked or raw state, while most of the other animal food products are cooked.

In the foregoing I have attempted to present for your consideration some of the abnormal conditions under which milk is too commonly found, and in conclusion I will offer a few thoughts relative to methods for correcting such evils. In continental Europe sterilization of the milk is largely practiced, but in this country no such a method is in vogue, and it would require much time to sufficiently educate people to generally adopt this method.

INSPECTION

The most feasible scheme is that of inspection whereby the health of the cows, the character of the feed used, the care of the barns, the methods of handling the milk, the care of the utensils, are under the direct supervision of some competent person, authorized by law or otherwise to enforce such regulations as may be deemed advisable. A system of meat inspection is maintained by some local and the federal government at an annual cost of many thousands of dollars, and a few cities maintain a fairly good system of milk inspection. In fact, the statutes of the State of Iowa are adorned with a law relative to milk inspection. It provides for the inspection of milk relative to the per cent of butter fat, and practically this alone. It may prevent to a certain extent the watering of milk, but on the whole it is productive of more harm than good, for it has a tendency to lead people to believe

that the milk is properly inspected, and again, it allows the unscrupulous vender to use preservatives, etc., and yet assure his patrons that his milk passed inspection.

Upon the whole, this most important branch of sanitary science is woefully neglected. At the present time two systems of inspection are in vogue in this country. The first compulsory, as carried out under state or municipal law, and voluntary as carried out under direction of some society, as a medical association. Of the two methods, I believe that the highest standard and best results may be obtained in certain localities under the second method, where a few dairymen would furnish milk of the required standard. But a more general, but lower standard result could be secured through the compulsory method, where the regulations would apply to all of the dairymen of that particular municipality or state.

With the first method funds with which to carry on the work are secured through taxation, while with the second method, they are paid by the dairyman who is re-imbursed by receiving a larger patronage or an increased price for his milk, usually both. Under the first method, the public receives the benefit, and they pay for it, while under the second method, only those who derive the benefit have to pay for it.

Under the first method, the standard, which is likely to be low, is fixed by law, while under the second, the standard is fixed by interested individuals, who are likely to make it high and who can easily change it as occasion demands. The first method must of necessity be more or less tainted with ward politics, while the second should be free from whatever baneful influences such conditions involve; being under control of persons who are better qualified by virtue of their special training to direct such work, but until such times as we can have some good reliable system of milk inspection, people should be urged to use pasteurized milk, especially for feeding infants and invalids, and no others are so well qualified to carry on this work as are the practicing physicians.

With these few and somewhat disconnected statements, I present the theme to you for consideration.

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XXIII

JUDICIAL •

There is herewith presented some court and attorney-general decisions upon questions relating to the Chapter 16, Title 12 of the Code, and to the Rules and Regulations of the State Board of Health and their practical application, which have been made during the biennial period recovered by this report:

THE RIGHT OF A TOWNSHIP OR TOWN TO QUARANTINE AGAINST OTHER
TOWNSHIPS OR TOWNS

VAN BUREN DISTRICT COURT

THEODORE JAMES ET AL

Chancery No. 10684.

VS.

A. L. RATCLIFF ET AL

This matter was submitted on plaintiffs' application for a temporary injunction to restrain the local board of health of Village township, Van Buren county, Iowa, and its officers from enforcing certain quarantine regulations, whereby persons coming from Eldon, Iowa, were prohibited from entering said township. The matter was very ably and fully presented. There is but little controversy as to the facts, so that it becomes largely a question of the application of the law to facts conceded.

The evidence shows that within the last thirty days there has been in the town of Eldon 51 cases of smallpox. Eldon is a town of about 2,000 inhabitants. That would indicate that about one in 40 of the citizens of Eldon has had the smallpox within the last 30 days. In view of this situation the defendants' local board of health, in compliance with the law established a rule which prohibited persons from Eldon entering the limits of the defendants' township. The question is, was that a reasonable regulation under the circumstances?

The law, of necessity, gives to boards of health a large discretion in cases of this kind, because public policy demands it; and in such cases private rights, however sacred, must give way. If the board of health has not abused its discretion, then the courts can not interfere with the laws established by such board.

Under the law, I think there can be no question but that the board of health had the power, if the necessity existed for its exercise, to prohibit persons from Eldon from entering the defendant's township. Whether or not a reasonable necessity existed for the enforcement of such a rule, was a matter left largely in the discretion of the local board.

It is not necessary for the court to determine what it would have done as a matter of policy, in view of the situation, had it been acting as the board of health. It is clear to the court that the board of health acted in good faith, and did not abuse the discretion which the law gave it, and for that reason the application for temporary injunction must be denied.

I have entered on the back of the petition an order denying the request of the plaintiffs for a temporary writ of injunction, and giving them an exception to said ruling, and have provided that they shall have 20 days to prepare and have signed a bill of exceptions.

M. A. ROBERTS, Judge.

Upon a hearing had on the application for a temporary writ of injunction in the within case on July 10, 1901, before the undersigned judge of the district court of Iowa in and for Van Buren county, Iowa, the said application is denied to which plaintiffs except and are given 20 days to file bill of exceptions.

July 11, 1901.

M. A. ROBERTS, Judge.

THE AUTHORITY OF THE STATE BOARD OF HEALTH, AND OF LOCAL BOARDS
OF HEALTH AND SCHOOL BOARDS TO EXCLUDE UNVACCINATED
CHILDREN OR TEACHERS FROM THE PUBLIC OR
PRIVATE SCHOOLS OF THE STATE

IN THE DISTRICT COURT OF LUCAS COUNTY, IOWA

DESSIE GIFFORD ET AL

VS.

Two Cases, Nos. 5800 and 5801

CHAS. DRAKE ET AL

Opinion

These two cases, by the three minor children of C. B. Gifford, by their father as next friend are—the one a mandamus proceeding to compel the defendants, as the board of school directors, to admit the plaintiffs to school, the other to recover damages for the alleged wrongful exclusion of plaintiffs from school. In each case it is alleged in the petition that the father is a resident land owner and taxpayer of the district, and that the plaintiffs live and reside with their parents in the school district, and are respectively 11, 8 and 6 years of age, and that they were in perfect health and had not been exposed to contagion of smallpox, or other infectious disease and no epidemic of smallpox was prevailing or anticipated in said locality, and that the plaintiffs were denied admission to the school of the district, and the only reason for their exclusion from school was that they had not been vaccinated.

To these petitions the defendants demurred for the reason that the defendants, as the board of directors of the school district, had the right

and it was their duty, under the laws of the state and the rules, orders and regulations of the State Board of Health, to deny plaintiffs the privilege to attend the said school for the reason that plaintiffs had not been vaccinated against smallpox, whether plaintiffs had been exposed to the ravages of smallpox or not, or whether there was an epidemic of smallpox existing in the vicinity of said school or not at that time, and that under the facts stated in the petition it was the duty of the defendants, as such board of directors, under the laws of the State and the orders, rules and regulations of the State Board of Health to deny the plaintiffs the privilege of attending school. This may not be the exact language of either demurrer, but it sufficiently indicates the point relied on.

Counsel agree that the question thus presented should be considered without regard to the technical objection that the rules, orders and regulations of the State Board of Health relied on by defendants are not in the record. While doubtful of this concession, particularly in the light of the statement of counsel for plaintiffs that it shall not prejudice plaintiffs at any subsequent time, yet, in view of the elaborate and able arguments of the case on both sides, the question shall have such consideration as I am able to give it.

There is no statute of this State requiring vaccination as a condition of admission to the public schools. There is a rule of the State Board of Health providing that "every person entering any public or private school of Iowa must give satisfactory evidence of protection by vaccination" and also further rule providing that "all persons in this State over the age of one year, who have not been vaccinated or who * * * do not furnish satisfactory evidence of protection from smallpox are hereby ordered to be vaccinated," and by similar order it was made the duty of the officers of the school district to require the enforcement of the rule so far as it applies to the pupils of the schools.

These are the "orders, rules and regulations" relied upon to support the demurrer, and it must be conceded that if they are valid and enforceable as they read they are a complete justification for the alleged acts of the defendants. For by the first rule quoted vaccination is plainly made a condition of admission to the schools, and this without regard to the facts of exposure to contagion, or the presence or danger of an epidemic of smallpox in the community. The same may be said of the other rule applying to the entire population of the state over one year of age. All such persons must either show satisfactory evidence of protection or be vaccinated, whether exposed to contagion or not, or whether the danger be imminent. This is compulsory vaccination.

There are some questions that can well be eliminated in discussing the proposition in hand as only indirectly bearing upon it. It may well be conceded that the legislature, in the exercise of the police power could make vaccination a condition of admission to the schools, without regard to conditions existing at any particular time or place. It might also be that the legislature, by the same authority, could require all the citizens of the state liable to contract smallpox to be vaccinated, without regard

to the imminence of the danger in the individual case. But the legislature of Iowa has not seen fit to do either of these things and the only legislative authority for the "rules, orders and regulations" in question is to be found in Section 2565 of the Code defining the powers and duties of the State Board of Health, which is as follows:

Sec. 2565. Powers—regulations—reports. The board shall have charge of and general supervision over the interests of the health and life of the citizens of the state; matters pertaining to quarantine, registrations of marriages, births and deaths; authority to make such rules and regulations and sanitary investigations as it from time to time may find necessary for the preservation and improvement of the public health, which, when made, shall be enforced by local boards of health and peace officers of the state. It shall prepare and furnish, through its secretary, to the clerks of the several counties such forms for the record of marriages, births and deaths as it may determine upon, and by its secretary make biennial reports to the governor, which shall include so much of its proceedings, such information concerning vital statistics, such knowledge respecting diseases, and such instruction upon the subject of hygiene, as it may be thought useful for dissemination among the people, with such suggestions as to further legislation as may be thought advisable.

This statute confers no express authority on the State Board of Health to require vaccination as a condition of attendance at school.

That it would be within the power of the legislature to confer such express authority is another proposition that may be conceded without, therefore, directly affecting the question in hand.

Nor can it be doubted that under the general powers conferred by the statute—"to have charge of and general supervision over the interests of the health and life of the citizens of the state" and "to make such rules and regulations * * * as it from time to time may find necessary for the preservation and improvement of the public health"—the Board of Health would have power to require vaccination of certain persons exposed to contagion, or of numbers of persons under certain conditions, as of exposure to contagion, or in certain localities infected with the disease. In other words, in the face of an emergency, the power conferred would authorize the Board of Health to compel vaccination as a condition of attending school.

All of the propositions so far stated will be found supported by some of the authorities cited below, and, I believe, denied by none. But with these propositions established we have still undetermined the question raised by the demurrers in these cases which may be stated thus:

Under the general authority conferred upon it by Code Section 2565, has the State Board of Health the power, by a general regulation applying at all times to all communities in the state without regard to the presence or threatened presence of smallpox, to make vaccination an absolute and general condition of admission to the public schools?

This question might be determined upon considerations of principle, involving the discussion of what powers may and what may not be dele-

gated by the legislature to administrative boards and the manner of such delegation, but while there is a lack of adjudication of the precise question in this state, it is believed the question is capable of a correct determination upon a view of precedents well considered and grounded upon correct principles as announced by the courts of other states.

One of the earliest cases upon the subject is that of *Duffield vs. Williamsport School District*, 162 Pa. 476, 25 L. R. A. 152, decided and reported in 1894. The case is decided without citation of authorities by the court, and the briefs of counsel reported show that only general principles were presented. An editorial note cites but one American case as bearing directly on the question, that of *Abeel vs. Clark*, 84 Cal., 226,

With this view of the situation let us turn to the opinion. The case was an action of mandamus to compel the admission of a minor son to the schools of Williamsport. Five facts are said to appear in the answer of the school district, and the first four may be briefly stated thus: (1) By an ordinance of the city it is provided that no pupil shall be permitted to attend school without vaccination. (2) That smallpox now exists in Williamsport and is epidemic in near by cities and towns. (3) That in this situation the board of health requested the school board to see that no pupil attend the public schools except they be vaccinated. (4) That upon considering this request and the general alarm the school board adopted a resolution in conformity with the recommendation of the board of health.

The answer was demurred to and the questions raised were over "the power of the school board to adopt reasonable health regulations for the benefit of their pupils and the general public, and over the reasonableness of the particular regulation."

It is to be noted that while the ordinance of the city was general in its operation no question is made as to its validity, but that the action of the school board was with reference to existing conditions of emergency. The discussions of the questions raised was along the line of what the school board might legally do in an emergency, and it was held the answer was good.

In the same year the Supreme Court of Connecticut in *Bissell vs. Davison*, 65 Conn., 183, 32 Atl. 348, 29 L. R. A. 251, held that under a statute by which the school committee was "invested with the power to require that every child shall be vaccinated before being permitted to attend the public schools" the school committee rightfully excluded a pupil who refused to be vaccinated as required by a vote or rule of the committee passed in accordance with such statute, holding: (1) That the rule in question was an objectionable way of exercising the power conferred, and was proper in the absence of an epidemic, because the statute imposed no such restriction; and (2) that the statute was constitutional.

The *Duffield* case, supra, and *Abeel vs. Clark*, 84 Cal., 226, are referred to and concerning the latter it is said:

"In California a statute gave to the trustees of the general common school districts the power to exclude from the schools scholars who had

not been vaccinated, and this was upheld as a valid exercise of the police power."

In the following year in the Court of Appeals of New York, *Re Smith*, 146 N. Y. 68, 40 N. E. 497, 28 L. R. A. 820, was decided. The city charter of Brooklyn provided that—

"In the presence of great and imminent peril to public health * * * by reason of impending pestilence it shall be the duty of the health commissioner to take such measures for the preservation of the public health from such impending pestilence as he may in good faith declare the public safety and health to demand."

The general law provided for isolation of persons infected or exposed to contagious disease and that the local board of health should at all times provide thorough and safe vaccination for all persons in need of the same. Under this authority the commissioner declared in the presence of an epidemic of smallpox that every citizen should be vaccinated, and that any person refusing should be quarantined. Concerning this the court says:

"That the powers conferred upon the health commissioner by the provisions of the city charter give to him the right to compel the vaccination of every citizen in the city of Brooklyn, if he would escape quarantine, seems an unnecessary, and it is an unwarrantable inference from the language. It is difficult to suppose the legislature would invest local officials with such arbitrary authority over their fellow citizens and the language of an act would have to be very plain before the court would be warranted in giving it such a construction."

In Wisconsin in 1897, in the case of *State vs. Burge*, 95 Wis., 390, 70 N. W. 347, 37 L. R. A. 157, in a mandamus case such as we have here, it was sought to justify the exclusion of children from the public schools, because not vaccinated, under a rule of the state board of health, passed, as alleged, under authority of a statute conferring just such general powers as are conferred by Section 2565 Code. There was no epidemic of smallpox in, near or approaching the vicinity of the school, and the children excluded from the school had not been exposed to smallpox. The court says:

"There is no statute in this state authorizing compulsory vaccination, nor any statute which requires vaccination as one of the conditions of the right or privilege of attending the public schools, and in the absence of any such statute we think it cannot be maintained that the rule relied on is a valid exercise of the rightful powers of the state board of health. The state board of health is a creation of the statute and has only such powers as the statute confers."

The rule is further held to be unreasonable in the absence of an epidemic of smallpox. The precise question we have here arose in Illinois, later in 1897, in the case of *Potts vs. Breen*, 167 Ill. 67, 47 N. E. 81, 39 L. R. A. 152. The children there excluded from school had not been exposed to infection by smallpox, and there was no epidemic of smallpox prevailing or apprehended in the vicinity of the school and the only reason for their exclusion was that they had not been vaccinated, and

the action was sought to be justified by a rule of the state board of health. The powers of that board are defined, in all essential respects in the very language of Section 2565 of the Code. The rule of the state board was "that no pupil shall be admitted to any public school in the state without presenting satisfactory evidence of proper and successful vaccination."

It was held (1) that the rule was beyond the power of the board to make, and it is in that connection said:

"Without a law making vaccination compulsory, prescribing it, upon grounds deemed sufficient by the legislature as necessary to the public health as a condition of admission to or attendance upon the public schools, neither the state board nor any local board has any power to make or enforce a rule or order having the force of a general law in the respects mentioned."

(2) That the rule was not a reasonable one where smallpox did not exist in the community, and when there was no cause to apprehend that it was approaching the vicinity of the school or likely to become prevalent there.

In the last two cases the authorities at that time existing are cited and discussed, particularly the cases from Pennsylvania, Connecticut and California, cited above, which are distinguished either by the existence of an emergency or by the presence of express legislative authority.

The *Potts-Breen* case, *supra*, is expressly followed in *Labough vs. Board of Education*, 177 Ill. 572, 52 N. E. 850, the court saying, "We adhere to the principles announced in that (the Breen) case and decline to further discuss the questions there determined."

The case of *Morris vs. City of Columbus*, 102 Ga. 792, 30 Pac. 850, 42 L. K. A. 175, decided in 1898, is relied on by defendants as sustaining their position. A very important and vital distinction between that case and the one at bar is indicated in the first sentence of the opinion which is as follows:

"In 1890 the general assembly conferred upon the mayor and aldermen of the city of Columbus authority to declare by resolution that vaccination shall be compulsory upon all persons living in the county of Muscogee or any part thereof."

Resolutions, under authority of this act, were passed, and it was for a violation of these resolutions the case arose. The first question discussed, that bears on the issue here, is that there was no necessity for the enforcement of the ordinances, and upon this the court says:

"The right to enforce vaccination (assuming for the present that its enforcement is constitutional), is derived from necessity, and although the authority conferred upon the municipal corporation of Columbus is very broad, still, we cannot assume that the legislature intended that they should exercise this authority save in cases of necessity. Did the necessity for the enforcement of the ordinance against plaintiff in error exist? We think there can be no question under the facts appearing in the record, but that the municipal authorities had reasonable grounds for apprehending that an epidemic of smallpox was imminent."

It is further said in the opinion: "That municipal authorities have carried into execution the power conferred upon them by the general assembly. They have, it would seem, in no way transcended that power."

Upon the question raised as to the constitutionality of the law the court concludes:

"We hold that the legislature has power to pass an act compelling vaccination and that it may delegate this authority to a municipal corporation. But while this is true, municipal corporations must have express authority from the legislature, as no such power will ever arise by implication."

The Illinois and Wisconsin cases above referred to are cited in support of this doctrine. In Indiana it is held to be the rule that under general powers granted by statute, boards of health have power to exclude unvaccinated children from the public schools when there is an emergency on account of danger from smallpox. *Blue vs. Beach*, 155 Ind. 121, 56 N. E. 89, 50 L. R. A. 64. The opinion in this case is of considerable length, well reasoned and supported by numerous authorities. Most of the cases here referred to are considered at length, and the rule of the Illinois and Wisconsin cases is said not to militate against the rule announced, under the facts. Speaking of the order of the local board of health the court says:

"The order was the offspring, as we have seen, of an emergency arising from a reasonable apprehension upon the board's part that smallpox would become epidemic or prevalent in the city of Terre Haute. The rule or order could not be considered as having any force or effect beyond the existence of that emergency, and Kleo Blue, by virtue of its operation could only be excluded from school upon his refusal to be vaccinated until after the danger of an epidemic of smallpox had disappeared. Any other construction than this would render the rule or order absurd and place the board in the attitude of attempting to usurp authority."

In *Horn vs. Bell*, 157 Ind. 25, 60 N. E. 672, the rule announced in the Blue case is affirmed.

In North Carolina, *State vs. Hay*, N. C. —, 49 L. R. A. 588, it has been held that there is no provision of the constitution which forbids the legislature from authorizing county commissioners to make such regulations and provisions for the vaccination of the inhabitants of the county as they may deem necessary to protect the public health, and that they may provide for compulsory vaccination. The opinion of the learned judge is chiefly remarkable for the wealth of citations from such distinguished lights of ancient and modern times as Grotius, Montesquieu, Lord Hale, Lord Bacon, Broom and Macauley. But coming down to more recent days he concludes:

"The power of the legislature to authorize county and municipal authorities to require compulsory vaccination has been exercised in nearly every state, and has been recently sustained by the highest courts of two of our sisters states."

He cites only the Morris case from Georgia and the Blue case just referred to, with the naive remark: "and there are no decisions to the contrary."

In July, 1901, the supreme court of Michigan, in *Mathews vs. Board of Education*, Mich., 86 N. W. 1036, 54 L. R. A. 736, quote approvingly the language herein quoted from the opinion in the Burdge case from Wisconsin. And the conclusion of the majority of the court is thus expressed:

"What I do say is that the legislature has not undertaken to give them (school boards) the power, when no epidemic of contagious disease exists, or is imminent in the district, to pass a general continuing rule which would have the effect of a general law excluding all pupils who will not submit to vaccination."

The latest expression on the subject is the case of *Freeman vs. Zimmerman*, Minn., 90 N. W. 783, decided June, 1902, and cited by defendant. It is there expressly stated that there was an emergency prompting the action of the respondents in requiring vaccination as a condition of admission to the public schools. The charter of the city of St. Paul provides for the office of health commissioner and he was expressly authorized by the charter of the city to require all persons in the city to be vaccinated, and to require a certificate of vaccination as a condition to the admission of children to the public schools. It is said if the general statutory provisions be insufficient the authority so granted is ample to sustain the regulation of the commissioner ordered enforced.

A few other cases are found cited upon the question, which have not been accessible. The case of *Abeel vs. Clark*, 84 Cal. 226, already referred to, is said in several of the cases here cited to involve the constitutionality of a statute requiring that all children attending the public schools should be vaccinated.

Re Rebenack, 62 Mo. App. 8, is several times cited and would seem from the comments made upon it by the Indiana supreme court in the Blue case, to sustain the proposition that under general powers, without express authority, an administrative board could make vaccination a condition of admission to schools. None of the references to the case indicate whether the regulation was sought to be enforced during an epidemic or not.

The case of *Hagan vs. Strong*, 2 Vt., 427, is said in the Morris case to hold that the municipal authorities of a town in Vermont had authority under a general power "to take the most prudent measures" to prevent the spread of smallpox, to levy and collect a tax to defray the expenses of having the inhabitants vaccinated, and that it was conceded by both sides the town would have the authority when the danger of an epidemic of smallpox was imminent.

Re Walters, 84 Hun. 457, 32 N. Y. Supp. 322, is also cited, and is said in the Potts-Breen case to involve the constitutionality of statutes requiring all children to be vaccinated before being admitted to the public schools. The case is digested in the 10th General Digest, p. 529, as follows:

"N. Y. Laws, 1893, Chap. 661, Sec. 200, providing that no unvaccinated child or person shall be admitted into any of the public schools, and commanding the officers in control of such schools to enforce the prohibition, is a valid exercise of the police power."

From these cases, which are believed to be all there are bearing directly upon the question, it is not difficult to deduce the rules already announced:

(1) That the legislature, in the exercise of the police power, could make vaccination a condition of admission to the public schools.

(2) That the legislature might confer express authority upon the board of health to require vaccination as a condition of admission to the public schools.

(3) That under mere general powers, such as are now conferred upon the State Board of Health by statute, a regulation of the Board making vaccination a condition of enjoyment of school privileges during an epidemic, or imminent danger of an epidemic of smallpox, would be valid.

But there is an utter lack of authority—except, possibly, the *Rebenack* case, in Missouri—for saying that in the absence of express legislative authority, a board of health—or other administrative board—can require vaccination as a general condition of admission to the schools when no epidemic of smallpox exists or is threatened.

The authorities, almost without exception, recognize that to give validity to such a regulation of a board of health there must be (1) either a statute to the same effect, which the board is called upon to enforce, or (2) express statutory authority to make the regulation, or (3) an emergency justifying the enactment and enforcement of the rule under general powers.

Perhaps the strongest announcement of the last proposition is found in *Indiana*, but in the *Blue* case, cited, the court carefully guards against announcing a doctrine that might be construed to authorize a permanent exclusion from school of an unvaccinated child.

"The rule or order could not be considered as having any force or effect beyond the existence of that emergency, and *Kleo Blue*, by virtue of its operation, could only be excluded from school, upon his refusal to be vaccinated, until after the danger of an epidemic of smallpox had disappeared."

If the pupil cannot be excluded after the danger of an epidemic is past, he cannot, in reason, be excluded before such danger arises.

The holding of the *Illinois* and *Wisconsin* courts are directly in point, being based not only upon similar facts, but upon statutes identical in spirit and meaning, if not, indeed, in language, and are not only well supported by authority, but have been in turn recognized in subsequent discussions of the subject as announcing correct principles of law. It would require very considerable weight of authority to the contrary to justify a holding against rules of law so announced, and to my mind such contrary authority is entirely lacking.

Attention is called to an opinion of Attorney-General Remley which is said to sustain the position of defendants. The learned attorney general skillfully avoids the rock that proves the stumbling block in this case. He is speaking of "The power of a state to require all persons to be vaccinated, *when danger threatens*"—and he is "thoroughly convinced that every *reasonable order* made by boards of health will be upheld by the courts, even to the extent of requiring all persons not immune in a community *threatened with the dread scourge* to be vaccinated. The reasonableness of any order depends, of course, upon the *necessity for it, the proximity of the danger.*"

These are just the propositions upon which stress is laid by all the authorities. For the reasons then (1) That the State Board of Health had no power to require vaccination as a condition of admission to the public school, in the absence of an emergency, such as a threatened invasion of the community by smallpox, and (2) That the regulation relied on is, under the facts pleaded in these cases unreasonable, the demurrers will be overruled.

In so holding, however, it is not intended to say that the rules and regulations of the State Board of Health in respect to vaccination are not valid and enforceable in an emergency such as calls for their exercise, but only that under the facts pleaded in these cases no such emergency existed.

The rules in question, considered as general regulations of universal application throughout the state, without regard to the existence of an emergency requiring such measures, are in the nature of general laws imposing a permanent and unyielding condition upon the enjoyment of public school privileges, and a restriction upon the personal liberty of all citizens, which are beyond the power of the board of health to enact. But considered as applicable only in an emergency requiring prompt and effective administrative action to check an existing epidemic, or avoid a threatened one, and as having no application to pupils or citizens not affected by such conditions, and as having no force either before the occasion for their operation arises or after it subsides, they are valid regulations.

In the one case they would be considered an exercise of legislative power which the board of health does not possess, and in the other as an administrative process within its power as defined by statute. This distinction is recognized by practically all the authorities referred to and many others.

"The legislature cannot delegate its power to make a law, but it can make a law to delegate a power to determine some fact or state of things upon which the law makes, or intends to make, its own action depend."

Locke's Appeal, 71 Pa. 491, 13 Am. Rep. 716; Blue vs. Beach, *supra*; Hurst vs. Warner, 102 Mich. 238, 26 L. R. A. 484-491.

"The true test and distinction is between the delegation of power to make the law, which necessarily involves a discretion as to what it shall be, and conferring authority or discretion as to its execution to be exercised under and in pursuance of the law. The first cannot be done. To the latter no valid objection can be made."

Railway Co. vs. County Commissioner, 10 St. 88; *State vs. Burdge*, supra.

"It is a principle not questioned that, except when authorized by the constitution, as in respect to municipalities, the legislature cannot delegate legislative power, cannot confer on any body or person the power to determine what shall be the law. The legislature alone must determine what it shall be."

State vs. Young, 29 Minn. 476, N. W. 737-754; *Potts vs. Breen*, supra.

The clerk will in each of these cases enter an order overruling defendants' demurrer to the petition, noting defendants' exception, and giving defendant till the first day of the next term to plead.

January 3, 1903.

C. W. VERMILION,
Judge.

THE AUTHORITY OF LOCAL HEALTH BOARDS TO DETAIN THE U. S. MAILS FOR SANITARY PURPOSES

The following communications are interesting and will be helpful to sanitary authorities everywhere. In several parts of the State similar questions have arisen and we are glad to have so clear a statement from one in authority.

The Secretary of the State Board of Health received the following letter October 11, and referred it to Mr. N. J. Miller, Superintendent of Mails at Des Moines, who returned it with the request that it be laid before Captain E. L. West, Superintendent Railway Mail Service, Chicago, which was done. His reply thereto follows the letter of Dr. Thomas:

RED OAK, IOWA, October 10, 1901.

Dr. J. F. Kennedy, Secretary State Board of Health, Des Moines, Iowa:

Dear Doctor—Will you please give me an opinion as to what authority we have to detain United States mails for disinfection in cases where we suspect they have been infected with smallpox. I was notified by the railroad authorities last night that a mail clerk on the Keokuk branch had broken quarantine and arrived here last night with his car. He is the same man of whom I wrote you last week, and according to the evidence I have he was only under quarantine a period of twelve days, and his wife and child are at the present time affected with the smallpox. I therefore had him detained and telegraphed to the health officer at Keokuk to inquire if he had been properly disinfected and legally released. I at once had the mails disinfected, and detained the car until this morning. At about 3 o'clock A. M. I received a telegram from Dr. Bailey, health officer at Keokuk, which said that the man had been disinfected and released on the 8th inst. I therefore released the man this

morning. Now, according to the state regulations, the Keokuk authorities had no right to release the man under any conditions in less than seventeen days, but in this case the man was only quarantined for a period of twelve days, and I am not satisfied that desquamation had entirely ceased. However, it seemed to me that I had no choice but to release him after I received the telegram from the Keokuk authorities. As it is quite probable that we may have other cases of a similar nature, I would like to know if we have full power to detain United States mail for a sufficient time to disinfect it. I have talked with the postmaster here in regard to this matter, and he seems to doubt our authority on the ground that a state officer cannot interfere with United States business, and he knows of no regulations of the Postal Department allowing him to detain the mail for the purpose of disinfection.

Will you kindly let me have your opinion or that of the Attorney General at your earliest convenience, and oblige,

Yours respectfully,
LOUIS A. THOMAS, Health Officer.

RAILWAY MAIL SERVICE, OFFICE OF SUPERINTENDENT, SIXTH DIVISION

CHICAGO, ILL., October 16, 1901.

Respectfully referred to Mr. J. F. Kennedy, Secretary State Board of Health, Des Moines, Iowa:

The rules of the various state boards of health are supreme in matters of this kind.

It was only recently that we had a case occur on the U. P. System in our Omaha & Ogden R. P. O. One of the clerks who was a member of the crew on duty was found to be infected with smallpox while en route. The two postal cars in this train were set out, quarantined and the entire mail, contents of postal cars, clothing of clerks are in fact every piece of furniture in the cars fumigated by the sulphur process, and upon the arrival of the cars and crew at Cheyenne, all of the members of the crew, including the infected clerk, were taken to the isolation hospital and held there for the time specified by the rules of the state board of health of Wyoming.

In other words, to sum the matter up, the department places the health of the community and public as paramount to everything else.

I send these papers through you to Dr. Thomas, so that you may see my reply and then forward them to him with such remarks as you may desire to make.

E. L. WEST, Superintendent.

WHO PAYS THE BILLS?

Local Boards of Health—city, town and township—have been puzzled greatly to determine from Chapter 16, Title XII of the Code, who pays the bills incurred by such boards in the discharge of their duties as guardians of the public health. Section 2570 has been regarded as ambiguous and obscure as well as conflicting with other declarations in this chapter.

The following correspondence relative to this subject will be interesting:

CHARLES CITY, IOWA, June 23, 1902.

J. F. Kennedy, Secretary State Board of Health, Des Moines, Iowa:

Dear Sir,—About April 18, 1902. James D. Watson, who claimed that his home was in Kansas City, Mo., came to this city and put up at the Hildreth Hotel, sick, when a physician was called and he was found sick with smallpox. The city removed him to a small house just outside the city limits, furnished a nurse and all necessary medical attendance and provisions, until May 12th, when he was discharged as cured. The health board of the city certified the bills of expense to the county. At the June session of the board of supervisors the board rejected all the bills under Section 2571 of the Code, claiming that Charles City was not a township, and therefore if they paid the bills there was no law to recover from the city. Please examine Section 2570 and 2571 of the Code of 1897, and give your opinion as to the liability of the county in such cases. The board of health contend that the county is liable for all such bills, and not the city. If you are not certain about the construction of the law, you will do this city a great favor by submitting the question to the Attorney-General, for his decision.

An early reply will be highly appreciated by the board of health of this city, as well as by

Yours truly,

W. W. DENNIS, Secretary Board of Health.

This communication was referred to the attorney general as shown by the following letter:

Iowa State Board of Health, Office of the Secretary.

DES MOINES, IOWA, June 23, 1902.

Hon. Charles W. Mullan, Attorney-General, City.

Dear Sir,—The enclosed letter was received this morning and you will note that a question is asked that has been a source of a great deal of dissension ever since the law was passed in 1880. Hon. Mr. Hern in the last legislature attempted to have the law so amended as to remove this conflict, but I think his bill did not pass. If you will kindly give your version of the law on this matter and send me a copy of the same I will be greatly obliged. I am,

Very respectfully,

J. F. KENNEDY.

The following is the reply received from the Attorney-General and sent to Mr. W. W. Dennis:

Sir,—Your request of the 23rd inst. for an opinion as to whether the county is liable in the first instance for the expense incurred in providing nurses, needful assistance and supplies to a person infected with smallpox, where such person, or those liable for his support, is unable to pay the same, and where such person has been quarantined by a local board of health, has been referred to me.

Section 2570 of the Code provides that when any person shall be infected, or shall have been recently infected, or sick with smallpox or other disease dangerous to the public health, whether a resident or otherwise, it may make such provisions as are best calculated to preserve the inhabitants against danger therefrom by removing such person to a separate house, when it may be done without injury to his health, and provide nurses, needful assistance and supplies, which shall be charged to the person or those liable for his support, if able. If unable, it shall be done at the expense of the county.

Here the local board of health is given full power to make such provisions as are best calculated to preserve the health of the public, and is authorized to remove the person infected with such infectious disease and isolate him from other inhabitants, and is authorized to provide nurses, assistance and supplies for him while so isolated.

This section further provides that such person, or those liable for his support, shall be liable for the expense incurred for such nurses, assistance and supplies, if he or those liable for his support are able to pay the same; but if unable to pay, the statute then specifically provides that this shall be done at the expense of the county.

In *City of Clinton vs. County of Clinton*, 61 Iowa, 205, the question arose as to the liability of the county for expense incurred in providing for certain persons infected with smallpox while under quarantine by the local board of health. The court said:

"If we are correct, then the sick person is properly chargeable with all the expenses which may properly be incurred under either section, including the expense of removal, if that is adopted, and the expense of isolation, if that is adopted; and we think the county is ultimately liable for the same if the sick person and those liable for his support are unable to pay."

In *Gill vs. Appanoose County*, 68 Iowa, 20, this section was under consideration, and it was held in this language:

"This provision will bear no other interpretation than that the county is liable for the care of the sick persons contemplated in the statute only in case they, or the persons liable for their support, are not able to make compensation therefor. It plainly provides that the county shall be liable only upon the conditions specified. Upon these conditions the county's liability depends, and it cannot be established until it is shown that the facts exist which are contemplated by the statute."

I therefore conclude, and it is my opinion, that the county is liable for the expense incurred in a quarantine of this character when the person, or those liable for his support, is unable to pay such expense.

Respectfully submitted,

June 27, 1902.

DR. J. F. KENNEDY,

Secretary State Board of Health.

CHAS. A. VAN VLECK,

Assistant Attorney-General.

A CORRECTION.

Since this report has been in press the SECRETARY has had his attention called to the fact that the conflict between certain sections of the Code relating to the organization of local boards of health, as cited in his article entitled "Duties and Responsibilities of Local Boards of Health" and found on page — and following is more apparent than real. Sections 1024 to 1046 relate to cities under special charters. Chapter 16, Title XII of the Code, to towns and cities under general charter and to district townships. With these facts in view the criticism of the SECRETARY was uncalled for.

XXIV

APPENDIX

CHAPTER 16, TITLE XII, THE CODE

Relating to State Board of Health

MEMBERS

Section 2564 The State Board of Health shall consist of the attorney-general and the state veterinary surgeon, who shall be members by virtue of their offices, one civil engineer and seven physicians, to be appointed by the governor, each to serve for a term of seven years and until his successor is appointed; vacancies to be filled by the governor for the unexpired term. But no one of the seven physicians hereafter appointed shall be an officer or member of the faculty of any medical school, and the governor shall have the power to remove any member of said board for good cause shown. It shall meet semi-annually in May and November, and at such other times as it may decide upon, such meetings to be held at the seat of government; suitable rooms (office supplies and furniture, except postage and stationery*) therefor to be provided by the custodian of the capitol. At the meeting held in May, a president from their number, and the Secretary who shall be a physician not of their number, shall be elected, and the latter have an office in the capitol.

DUTIES

Sec. 2565 The Board shall have charge of and general supervision over the interests of the health and life of the citizens of the state; matters pertaining to quarantine, registration of marriages, births and deaths; authority to make such rules and regulations and sanitary investigations as it from time to time may find necessary for the preservation and improvement of the public health which when made shall be enforced by local boards of health and peace officers of the state. It shall prepare and furnish, through its Secretary, to the clerks of the several counties such forms for the record of marriages, births and deaths

(1) * As amended by the Twenty-seventh General Assembly.

as it may determine upon, and by its Secretary make biennial reports to the governor, which shall include so much of its proceedings, such information concerning vital statistics, such knowledge respecting diseases, and such instructions upon the subject of hygiene, as may be thought useful for dissemination among the people, with such suggestions as to further legislation as may be thought advisable.

Sec. 2566 It shall be the duty of all assessors, at the time of making assessments, to obtain and report to the clerk of the district court, upon blanks adopted by the State Board of Health and furnished by the county auditor, such registration of births and deaths as occur within their respective districts for the year ending December 31st immediately preceding.

VITAL STATISTICS

Sec. 2567 The clerk of the court in each county shall keep a book in which shall be recorded all marriages occurring within the county, together with such data respecting the same as shall be required by the State Board of Health, and shall report to the Secretary the State Board of Health on or before the first day of June in each year such data respecting such marriages for the year ending December thirty-first immediately preceding. The clerk of the district court of each county shall keep a book in which shall be recorded all births and deaths occurring within the county as shown by the returns filed in his office by the assessor, as provided in Section 2566; and on or before the first day of June in each year shall furnish to the Secretary of the State Board of Health a report of such births and deaths.

LOCAL BOARDS

Sec. 2568 The mayor and council of each town or city, or the trustees of any township, shall constitute a local board of health within the limits of such towns, cities or townships of which they are officers. The town, city or township clerk shall be clerk of the local board, which board shall appoint a competent physician as its health officer, who shall hold office during its pleasure. It shall regulate all fees and charges of persons employed by it in the execution of health laws and its own regulations and those of the State Board of Health; have charge of all cemeteries dedicated to public use not controlled by other trustees or incorporated bodies, and the burial of the dead; make such regulations as are necessary for the protection of the public health respecting nuisances, sources of filth, causes of sickness, rabid animals and quarantine, not in conflict with any regulations of the State Board of Health, which shall also apply to boats or vessels in harbors or ports within their jurisdiction; to proclaim and establish quarantine against all infectious or contagious diseases dangerous to the public, and maintain and remove the same, as may be required by regulations of the State Board; may, when satisfied upon due examination that any cellar, room, tenement building, or place occupied as a dwelling or otherwise has become, or is by reason of the number of occupants, uncleanness or other cause, unfit for such

purpose, or a cause of nuisance or sickness to the occupants or the public, issue a notice in writing to such occupants, or any of them, requiring the premises to be put in proper condition as to cleanliness, or requiring the occupants to remove or quit such premises within a reasonable time to be fixed; and, if the persons so notified or either of them neglect or refuse to comply therewith, may by order cause the premises to be properly cleaned at the expense of the owner or owners, or may forcibly remove the occupants and close the premises, and peace and police officers shall execute such orders, which premises so closed shall not be again occupied as a dwelling place without written permission of the Board. The quarantine authorized by this section in case of infectious or contagious diseases may be declared or terminated by the mayor of any city or town, or the township clerk outside of such city or town, in cases required by regulations of the State Board of Health, upon written notice given by any practicing physician of the existence of such disease, or termination of the cause for quarantine, as the case may be.

INFECTED PERSONS

Sec. 2569 The local board may with its physician when of the opinion it is necessary for the preservation of the lives or health of the inhabitants, enter a building, vessel or place for the purpose of examining into, preventing, removing or destroying any nuisance, source of filth or cause of sickness, and in case its members or physician shall be refused such entry, make complaint through any member under oath to any magistrate of the county, whether a member of the board or not, stating the facts so far as known, and the magistrate shall thereupon issue his warrant, directed to any peace officer of the county, commanding him between the hours of sunrise and sunset, accompanied by two or more members of the Board, to prevent, remove or destroy such nuisance, source of filth or cause of sickness, which shall be executed by the officer under the direction of such members of the Board, and it may order the owner of any property, building or place to remove at his own expense, within twenty-four hours, or such other time as may be fixed by it, after notice has been served upon such owner, occupant or other person in charge thereof, any nuisance, source of filth or cause of sickness found thereon, and if such person fails or neglects to comply with the order and make such removal, it may cause the same to be done at the expense of the owner or occupant.

EXPENSES—HOW PAID

*Sec. 2570-a When any person shall be sick or infected with small-pox or other infectious or contagious disease dangerous to the public health, whether a resident or otherwise, the local board of health shall make such provisions as are best calculated to protect the inhabitants therefrom, and may remove such person to a separate house, or to a pest house, or detention or other hospital, and shall provide needful assistance, nurses, medical attendance and supplies. If in the judgment of said

*As amended by the 28th G. A.

board such person cannot be removed, then he shall be cared for at the place where he resides in the same manner as above provided. In case of the removal of more than one person to the same house, or to any pest house, or detention or other hospital, it shall provide needful assistance, nurses, medical attendance and supplies necessary for their proper care. All bills for expenses incurred in carrying out the provisions of this section shall be filed with the clerk of the local board of health, which board shall examine the same and act thereon at its next regular meeting after the same have been filed with the clerk, and certify the amount allowed thereon by it to the county auditor and the county board of supervisors shall act upon said bills as thus certified at its first regular meeting thereafter. The local board of health shall allow an amount on such bills as shall be reasonable and the certificate of the local board of health shall be *prima facie* evidence of the correctness of such bills, but the board of supervisors may revise the amount so allowed and fix the same. The expenses paid under the provisions of this act and the chapter of which it is amendatory shall in no case exceed the reasonable value of the property furnished or services rendered and the county shall not advance such expenses until the same shall have been audited and allowed by the board of supervisors. When one or more persons shall be confined in a house, or pest house, or detention or other hospital, the local board of health shall ascertain the total amount of expense incurred for the care of such persons, which amount shall be equitably apportioned by the local board of health between the several persons cared for, and when so apportioned the president, and the clerk of said board shall certify to the county auditor the name of such person or persons and their proportionate share, and the county shall recover the same in any court of competent jurisdiction within the state, and the certificate of the president and clerk of said board shall be *prima facie* evidence of the amount furnished such person or persons. In case of the inability of any person or persons, or those liable for their support, to pay for the expenses incurred as provided in this section, such expense shall be paid by the county, and the board of supervisors of said county shall, at the time it levies the general taxes, levy on the property of the city, town or township, from which such expenses were certified a sufficient tax to reimburse the county to the extent of one-third of the amount paid by it under the provisions of this act.

In the event that any of expenses made as aforesaid shall be collected from private individuals after said tax has been levied on the property of the city, town or township, said city, town or township shall have credited to them one-third of the amount so collected. It is further provided that nothing herein contained shall be construed to prevent any person quarantined, as herein provided, from employing at his own expense the physician or nurse of his choice, and no part of the expense of the physician or nurse employed by the board of health shall be apportioned to him under the provisions of this act. The forcible removal of infected persons, as herein provided, shall be effected by an application made to any civil magistrate, in the manner provided for the removal and abatement of nuisances, who shall issue the warrant as directed in

such cases, to remove such person or persons to the place designated by the local board of health, or to take possession of the condemned or infected houses or lodgings, which warrant shall be executed under the direction of the local board of health, and such officer shall receive a reasonable compensation to be determined and allowed by said board.

QUARANTINE, DISINFECTION AND PEST HOUSES—HOW PAID

*Sec. 2570-b. All expenses incurred by the local board of health in establishing, maintaining or raising a quarantine, including fumigation, and the building and providing any pest house, detention or other hospital shall be by it certified to and paid by the county in the first instance and the board of supervisors shall at the time of the levy of the taxes for general purposes levy a tax upon the township, town or city, to reimburse the county for the amounts paid by it under the provisions of this section. All acts or parts of acts conflicting with this section are hereby repealed.

LOCAL BOARD MEETINGS—REGULATIONS—REPORTS—EXPENSES—TAX

*Sec. 2571. Local boards of health shall meet for the transaction of business on the first Mondays of April and November in each year, and at such other times as may seem necessary. They shall give notice of all regulations adopted by publication thereof in some newspaper printed and circulated in the town, city or township, or, if there is none, by posting a copy thereof in five public places therein, and through their physician or clerk shall make general report to the State Board at least once a year, and special reports when it may demand them, of its proceedings and such other facts as may be required, on blanks furnished by and in accordance with instructions from it. All expenses incurred in the enforcement of the provisions of this chapter, when not otherwise provided, shall be paid by the town, city or township; in either case all claims to be presented and audited as other demands. In the case of townships, the trustees shall certify the amount required to pay such expenses to the board of supervisors of the county, and it shall advance the same, and, at the time it levies the general taxes, shall levy on the property of such township a sufficient tax to reimburse the county, which, when collected, shall be paid to and belong to the county.

REGULATIONS AND SPECIAL POWERS OF THE STATE BOARD OF HEALTH

*Sec. 2572.—Local boards of health shall obey and enforce the rules and regulations of the State Board; and peace and police officers within their respective jurisdictions, when called upon to do so by the local boards, shall execute the orders of such board. If any local board of health shall refuse or neglect to enforce the rules regulations of the State Board of Health, the State Board of Health may enforce its rules and regulations within the territorial jurisdiction of such local board, and for that purpose shall have and may exercise all the powers given

*As amended by the 28th G. A.

by statute to local boards of health; and the peace and police officers of the state, when called upon by the State Board of Health to enforce its rules and regulations, shall execute the orders of such board. All expenses incurred by the State Board of Health in determining whether its rules and regulations are enforced by a local board of health, and in enforcing the same when a local board has refused or neglected to do so, shall be paid in the same manner as is now provided for the payment of the expenses of enforcing such rules and regulations by local boards of health.

PENALTIES

Sec. 2573. Any person being notified to remove any nuisance, source of filth or cause of sickness, as in this chapter provided, who fails, neglects or refuses to do so after the time fixed in such notice, or knowingly fails, neglects or refuses to comply with and obey any order, rule or regulation of the state or local board of health, or any provision of this chapter, after notice thereof has been given as herein provided, shall forfeit and pay the sum of twenty dollars for each day he refuses such obedience, or for each day he knowingly fails, neglects or refuses to obey such rule or regulation, or knowingly violates any provision of this chapter, to be recovered in an action in the name of the clerk of the board, and when collected, to be paid to the clerk of the town, city or township, as the case may be, and for its benefit; and, in addition thereto, any one so offending, or knowingly exposing another to infection from any contagious disease, or knowingly subjecting another to the danger of contracting such disease from a child or other irresponsible person, shall be liable for all damages resulting therefrom, and guilty of a misdemeanor.

Sec. 2574. The secretary of the State Board of Health shall receive such salary as the Board shall fix, not to exceed twelve hundred dollars yearly, payable upon the certificate of the president to the state auditor, who shall issue his warrant for the amount due upon the state treasurer. Each member of the Board shall receive only actual traveling and other necessary expenses incurred in the performance of his duties, such expenses to be itemized, verified, certified, audited and a warrant drawn therefor in the same manner as the secretary's salary.

LOCATION OF PEST HOUSES—CONTROVERSY, HOW SETTLED

*Sec. 2575-a. That when a controversy arises between municipalities or between boards of health thereof, respecting the location of pest houses or hospitals for the treatment of infectious or contagious diseases, such matter shall be referred to the president of the State Board of Health, who shall forthwith appoint a committee of three (3) members thereof, which committee shall upon two days' notice to the parties interested, investigate the matter and make such order in the premises as the facts warrant, and such order shall be final.

*As amended by the 28th G. A.

JURISDICTION OF PEST HOUSE OR HOSPITAL

*Sec. 2575-b. The health officers of the municipality which is allowed to maintain a pest house or hospital for patients affected by infectious or contagious diseases outside the limits of said municipality, shall have exclusive jurisdiction and control of such pest house or hospital for the enforcement of all sanitary and health regulations.

ANNUAL APPROPRIATION

Sec. 2576.—The sum of five thousand dollars, or so much thereof as may be necessary, is annually appropriated to pay the salary of the secretary, expenses of the board, contingent expenses of the Secretary's office, and all costs of printing; all such contingent and miscellaneous expenses to be itemized, verified, certified, audited and paid as other expenses of the board.

*As amended by the 28th G. A.

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Twelfth Biennial Report

OF THE

Commissioners of Pharmacy

FOR THE

STATE OF IOWA.

1903.

PRINTED BY ORDER OF THE GENERAL ASSEMBLY.

DES MOINES.
B. MURPHY, STATE PRINTER.
1903.

Letter of Transmittal.

DES MOINES, IOWA, August 1, 1903.

To His Excellency, Albert B. Cummins, Governor:

SIR—We herewith submit to you the Twelfth Biennial Report of the Commissioners of Pharmacy for the State of Iowa for the official biennial period ending April 23, 1903.

FLETCHER HOWARD,

N. T. HENDRIX,

FRED RUSSELL,

Commissioners.

CHARLES W. PHILLIPS,

Secretary.

TREASURER'S REPORT.

*From April 23, 1901, to April 24, 1902, of the Commissioners of Pharmacy
for the State of Iowa, Charles W. Phillips, treasurer.*

RECEIPTS.

Cash on hand April 23, 1901.....	\$ 2,200.00
888 Examinations at \$5.00.....	1,600.00
229 Graduates at \$2.00.....	458.00
161 Delinquent renewals at \$1.00.....	161.00
18 Duplicate certificates at \$1.00.....	18.00
445 Changes of location at \$.50.....	222.50
7 Certificate: of percentage at \$2.00.....	14.00
3,576 Renewal: at \$1.00.....	3,576.00
166 Itinerant licenses at \$100.00.....	16,800.00
Total.....	\$ 25,139.50

DISBURSEMENTS.

C. W. Phillips, salary.....	\$ 1,200.00
C. W. Phillips, expense.....	9.80
Fletcher Howard, salary.....	1,560.00
Fletcher Howard, expense.....	52.19
N. T. Hendrix, salary.....	1,530.00
N. T. Hendrix, expense.....	316.21
W. L. Leland, salary.....	1,485.00
W. L. Leland, expense.....	804.28
Jennie Wharton, office work.....	10.00
W. F. Giesseman, making certificates.....	68.00
Frank Phillips, office work.....	147.00
C. L. Dahlberg, office work.....	15.00
Maud Wilcox, office work.....	10.11
John Herriott, state treasurer.....	15,000.00
John Herriott, state treasurer.....	1,411.98
License fund on hand.....	2,000.00
Total.....	\$ 25,189.50

TREASURER'S REPORT.

*From April 23, 1902, to April 24, 1903, of the Commissioners of Pharmacy
for the State of Iowa, Charles W. Phillips, treasurer.*

RECEIPTS.

Cash on hand April 23, 1902.....	\$ 2,000.00
428 changes of location at \$.50.....	214.00

115 Delinquent renewals at \$1.00	\$	115.00
13 Duplicate certificates at \$1.00		13.00
7 Certificates of percentage at \$2.00		14.00
215 Graduates at \$2.00		430.00
298 Examinations at \$5.00		1,490.00
3,880 Renewals at \$1.00		3,880.00
185 Itinerant licenses at \$100.00		18,500.00
Total		\$ 23,608.00

DISBURSEMENTS.

Fletcher Howard, salary	\$	1,585.00
Fletcher Howard, expense		166.23
W. L. Leland, salary		1,500.00
W. L. Leland, expense		490.55
N. T. Hendrix, salary		1,500.00
N. T. Hendrix, expense		852.51
C. W. Phillips, salary		1,200.00
C. W. Phillips, expense		110.25
W. F. Giesseman, making certificates		62.25
Frank Phillips, office work		20.00
Maud Wilcox, office work		10.00
Mabel Bennett, office work		88.00
R. L. Polk, directory		5.00
O. I. Jamison, office work		7.00
R. L. Crosswait, office work		41.69
G. S. Gilbertson, state treasurer		16,452.07
License fund on hand		8,000.00
Total		\$ 23,608.00

TREASURER'S REPORT.

Licenses issued to itinerant vendors of drugs during biennial period ending April 23, 1903.

DATE.	NAME.	AMOUNT.
1901		
April 24	M. O. Shoffstall	\$ 100
April 24	James F. Stringer	100
April 24	M. McAnulty	100
April 24	J. B. Green	100
April 26	A. G. Price	100
April 27	O. P. Brimmer	100
May 1	J. A. McHargue	100
May 1	G. W. Hathaway	100
May 3	R. C. Harrison	100
May 6	G. T. Griffin	100
May 10	Girt Long	100
May 10	P. Wheeligan	100
May 11	L. H. Haynes	100
May 15	W. H. Clutter	100
May 15	Floyd Williams	100
May 16	Ray Johnston	100
May 16	Aug. Reinke	100
May 20	Fred Chisel	100
May 20	R. F. Bonquet	100
May 21	T. C. Warner	100
May 21	T. N. Hall	100
May 22	W. W. Shannon	100
May 22	D. M. Jones	100
May 25	Jacob Kaisand	100
May 28	S. N. Doolittle	100

TREASURER'S REPORT—CONTINUED.

DATE.	NAME.	AMOUNT.
1901		
May 28	Otto Broesamle	\$ 100
May 28	F. Pape	100
June 1	John W. Shaw	100
June 8	J. J. McNanll	100
June 5	J. E. Mitchell	100
June 6	H. L. Knauss	100
June 6	B. Fields	100
June 10	S. J. Jones	100
June 11	Geo. A. Fitzgerald	100
June 12	B. E. Benson	100
June 17	O. V. Westenhaber	100
June 28	Henry Arndorf	100
July 2	G. Christy	100
July 5	Geo. Stannard	100
July 5	W. S. Luther	100
July 5	J. H. Knight	100
July 5	J. E. Johnson	100
July 8	R. H. Stibgen	100
July 12	James H. Peck	100
July 27	L. O. Whittaker	100
July 27	A. J. Oliver	100
July 27	F. G. Miller	100
July 30	Rav Ellis	100
August 8	J. A. Swanson	100
August 8	O. N. Conrad	100
August 8	L. W. Cowden	100
August 18	John Wileson	100
August 17	L. O. Flemming	100
August 20	W. H. Hartson	100
August 26	Frank Mains	100
August 28	L. M. Bond	100
September 2	E. A. Crow	100
May 1	Geo. H. Johnson	100
September 16	Frank Hollister	100
September 7	V. D. Hiatt	100
September 9	J. R. Huffer	1 0
September 10	E. J. Godfrey	100
September 23	H. A. Percival	100
September 18	B. H. Westfall	100
September 20	Ed. Wernitz	100
September 25	L. O. Bement	100
September 30	J. A. Edmond	100
September 23	F. A. Cornell	100
October 1	H. D. Rucker	100
October 2	L. Matille	100
October 2	L. J. Bain	100
October 4	L. E. Oates	100
October 1	B. W. Dawson	100
October 14	Ed. Whittauer	100
October 14	F. J. McCurdy	100
October 15	H. S. Birday	100
October 22	G. S. McCoy	100
October 23	Geo. A. Simmerman	100
October 24	John Searl	100
October 22	S. E. Miller	100
October 23	Peter Limburg	100
November 6	James H. Blakely	100
October 23	C. W. Gittins	100
October 29	C. H. Daniels	100
November 7	Fred Gearke	100
November 9	L. P. Zolman	100
November 12	W. H. Dunn	100
November 12	H. A. Donnelly	100
November 14	J. O. Harrison	100
November 14	D. W. Mack	100
November 19	H. N. Conrad	100
November 19	W. H. Crawley	100
November 29	Otto Broesamle	100
November 23	Aug Frohboese	100
November 27	Frank V. Earhart	100
December 7	J. E. King	100
December 11	W. M. Caswell	100
December 12	W. Lammers	100
December 17	E. N. Simmons	100

TREASURER'S REPORT—CONTINUED.

DATE.	NAME.	AMOUNT.
1901		
December 18	Gay Billings	\$ 100
December 20	S. B. Reist	100
December 20	Heme Patterson	100
December 21	J. K. McGavren	100
1902.		
January 1	Jacob Goeddertz	100
January 1	E. T. Jordan	100
January 3	D. C. Glasgow	100
January 6	D. A. Parsons	100
January 8	F. D. Lawrence	100
January 8	A. E. Benson	100
January 8	U. E. Dawson	100
January 6	A. L. Fox	100
January 7	W. E. DeCrane	100
January 7	Chas. E. Wenham	100
January 18	W. E. Jenkins	100
January 20	Wm Mains	100
January 14	T. J. Miller	100
January 20	Geo. Cowing	100
January 21	J. H. Gephardt	100
January 28	Frank E. Chisel	100
February 1	Mack Deal	100
February 1	J. M. Hobson	100
February 5	A. M. Pike	100
February 10	E. H. Barth	100
February 10	E. A. Eaton	100
February 12	A. S. Perryman	100
February 18	C. D. Knight	100
February 19	V. G. Newton	100
February 18	Fred H. Telschon	100
February 21	James White	100
February 26	Henry Van Dyke	100
March 3	H. C. Anderson	100
March 8	B. T. Reesler	100
March 8	V. J. Newton	100
March 8	H. G. Doolittle	100
March 11	Arthur J. Cole	100
March 4	J. T. Cowan	100
March 1	M. H. Heerbrand	100
March 20	Robert Wharton	100
March 24	Geo. A. Leonard	100
March 31	H. H. Bobenhouse	100
March 28	August Witt	100
March 28	A. M. Barnett	100
March 28	E. R. Tuwsley	100
March 26	I. E. Maple	100
March 21	Henry Van Dyke	100
March 26	James M. Dunn	100
March 31	R. J. Atkins	100
April 1	J. A. Cooley	100
April 2	John G. DuShane	100
April 2	Wm Beaver	100
April 7	W. E. Barker	100
April 7	L. O. Bement	100
April 5	L. A. Fay	100
April 5	Chas. K. Ross	100
April 14	E. G. Johnson	100
April 14	P. C. Peterson	100
April 14	C. W. Colburn	100
April 16	C. E. Broesamle	100
April 9	E. Babcock	100
April 12	H. O. Fritts	100
April 10	F. H. Whaley	100
April 12	T. F. Wilson	100
April 19	T. F. Corbette	100
April 21	W. S. Hall	100
May 1	W. S. McHargue	100
May 1	J. W. Haigler	100
May 1	W. T. Cabbage	100
April 21	H. I. Spawn	100
April 24	F. E. Lathrop	100
April 12	L. W. Fansler	100
April 25	Aquilla Walker	100
May 5	Jonn Peters	100

TREASURER'S REPORT—CONTINUED.

DATE.	NAME.	AMOUNT.
1902		
April 29	J. W. Moser	100
April 29	Jas. F. Stringer	100
April 29	M. D. Reed	100
April 30	R. J. Thomas	100
May 1	Herman Kuehl	100
May 1	Udo Wittbauer	100
May 5	E. L. Jenkins	100
May 9	H. W. Wilder	100
May 9	W. P. R. Cornell	100
May 9	Geo. H. Johnson	100
May 9	J. W. Leibrand	100
May 12	T. B. Hathaway	100
May 18	G. T. Griffin	100
May 18	J. L. Reed	100
May 19	Geo. Mick	100
May 19	E. E. Arnold	100
May 19	F. D. Lawrence	100
May 20	J. E. Johnson	100
May 15	H. C. Teeple	100
May 16	L. H. Haynes	100
May 20	M. O. Shoffstall	100
May 20	J. T. Rundlett	100
May 20	L. D. Roberts	100
May 10	H. A. Percival	100
May 23	J. I. Earnisse	100
May 24	A. G. Fletcher	100
May 24	H. A. Benson	100
May 21	Ray Johnston	100
May 21	Aug. Reinke	100
May 28	M. V. Reed	100
May 28	M. D. Reed	100
May 31	Clark Richardson	100
June 4	G. N. Hall	100
June 4	Henry Earnisse	100
June 7	F. P. Nichols	100
June 9	J. J. McNaul	100
June 10	B. A. Belcher	100
June 12	Miss C. Douglas	100
June 16	John W. Snaw	100
June 16	B. fields	100
June 16	Chas. Berkell	100
June 16	V. A. Birum	100
June 24	Girt Long	100
June 20	Geo. A. Fitzgerald	100
June 17	W. S. Aldrich	100
June 25	Otto Broesamle	100
June 28	R. A. Holland	100
July 1	P. W. Thompson	100
July 1	W. F. Monroe	100
July 10	O. V. Westenhaver	100
July 14	Martin Brennan	100
July 14	W. J. Mason	100
July 14	Lee Winslow	100
July 17	Ellis L. Burk	100
July 21	E. H. Broadie	100
July 24	John E. Akers	100
July 25	Jas. H. Peck	100
August 1	F. H. Miller	100
August 4	Ray Ellis	100
August 14	Joe Mowell	100
August 29	Herb Chittendon	100
August 7	Geo. J. Connor	100
August 12	L. W. Cowden	100
August 12	F. Pape	100
August 15	H. L. Knauss	100
August 13	S. N. Doolittle	100
August 14	M. P. Roberts	100
September 1	Wm. W. Horton	100
August 23	Chas. C. Mayer	100
September 2	T. W. Fritts	100
September 9	Eliz Streets	100
September 18	E. J. Godfrey	100
September 16	John A. Swanson	100
September 20	Frank L. Simmons	100

TREASURER'S REPORT—CONTINUED.

DATE.	NAME.	AMOUNT
1902		
September 26	Frank Dean	\$ 100
October 1	Ed Wernitz	100
September 29	W. W. Shannon	100
September 29	F. A. Cornell	100
October 1	D. W. Dawson	100
October 3	J. H. Southworth	100
October 8	H. A. Crandall	100
October 6	D. M. James	100
October 14	M. D. Davis	100
October 14	Ed Whitthauer	100
October 15	H. S. Higday	100
October 20	J. P. Lantz	100
November 8	J. W. Nesselroad	100
October 28	John Searl	100
October 28	John Heinmiller	100
October 29	C. W. Gittins	100
October 30	H. D. Rucker	100
November 1	Chris A. Johnson	100
November 8	Fred Gearke	100
November 7	S. E. Miller	100
November 6	C. T. Diggs	100
November 8	Robert Mick	100
November 8	F. C. Birum	100
November 13	F. C. Peterson	100
November 21	W. H. Olow	100
November 18	E. S. Harrison	100
November 24	W. H. Goodenough	100
December 1	K. S. Ballard	100
November 29	L. P. Zolman	100
December 2	Frank V. Earhart	100
December 3	A. H. Jordan	100
December 4	W. H. Crawley	100
December 8	H. E. French	100
December 18	Aug. Frohboese	100
December 13	J. E. King	100
December 18	Albert Hardin	100
1903.		
January 19	H. A. Benson	100
January 9	A. E. Benson	100
January 7	A. A. Cook	100
January 4	U. E. Dawson	100
January 21	J. R. Robinson	100
January 12	O. L. Thomas	100
January 19	A. G. Price	100
February 2	E. Mack Deal	100
February 5	Chas. S. Hobbs	100
February 6	M. M. Cooper	100
February 7	E. H. Sargent, Jr.	100
February 9	W. W. Elliott	100
February 11	Geo. Cowing	100
February 18	C. D. Knight	100
February 13	C. W. Colburn	100
February 11	E. H. Barth	100
February 11	E. A. Eaton	100
February 13	A. S. Perryman	100
February 19	P. J. Kleinjan	100
February 13	H. A. Percival	100
February 24	Emmet Edwards	100
February 27	Jas. F. White	100
March 2	Charlie Jones	100
March 4	Case Crary	100
March 4	B. F. Wilson	100
March 5	D. C. Glasgow	100
March 9	W. H. Phelps	100
March 7	D. P. Rusler	100
March 11	John T. Cowan	100
March 16	W. F. Clark	100
March 16	O. P. Brimmer	100
March 17	Wm. Mains	100
March 23	Henry Van Dyke	100
March 25	Geo. A. Leonard	100
March 29	H. E. Roby	100
March 29	E. R. Townsley	100
March 28	Edwin Wattonville	100

TREASURER'S REPORT—CONTINUED.

DATE.		NAME.	AMOUNT.
1908			
March	24	A. L. Allen	\$ 100
March	27	F. A. Chisel	100
April	1	H. H. Bobenhouse	100
March	28	O. D. Rice	100
April	2	J. M. Hobson	100
April	2	Myron Petrie	100
April	6	Chris Von Doehren	100
April	6	Chas. A. Nelson	100
April	7	Guy Roush	100
April	7	John Carr	100
April	10	Chris Harrington	100
April	8	Joseph Schaben	100
April	8	Alfred Hill	100
April	15	E. G. Johnson	100
April	15	P. C. Peterson	100
April	15	C. D. Johnson	100
April	10	A. M. Barnett	100
April	10	M. H. Heerbrand	100
April	17	C. E. Broesamle	100
April	14	E. W. Turner	100
April	15	W. E. Jenkins	100
April	15	W. D. Graves	100
April	15	John Ensey	100
April	17	S. B. Reist	100
April	20	T. F. Corbette	100
April	17	Eugene Babcock	100
April	17	T. R. Whitthour	100
April	22	W. S. Hall	100
April	20	J. E. Johnson	100
April	21	H. I. Spawn	100
April	20	H. O. Frittz	100
April	21	Beryl Jarnagin	100
April	20	R. S. Petty	100
April	22	Thomas Gatton	100
Total			\$ 85,800

PERMITS IN FORCE JANUARY 1, 1903.

COUNTY.	No. permits reported.	COUNTY.	No. permits reported.	COUNTY.	No. permits reported.
Adair.....	8	Floyd.....	18	Monona.....	8
Adams.....	5	Franklin.....	7	Monroe.....	9
Allamakee.....	6	Freemont.....	5	Montgomery.....	5
Appanoose.....	6	Greene.....	14	Muscatine.....	5
Audubon.....	6	Grundy.....	8	O'Brien.....	8
Benton.....	9	Guthrie.....	6	Osceola.....	6
Black Hawk.....	18	Hamilton.....	15	Page.....	6
Boone.....	11	Hancock.....	18	Palo Alto.....	6
Bremer.....	8	Hardin.....	21	Plymouth.....	6
Buchanan.....	15	Harrison.....	7	Pocahontas.....	13
Buena Vista.....	11	Henry.....	12	Polk.....	56
Butler.....	18	Howard.....	10	Pottawattamie.....	8
Calhoun.....	20	Humboldt.....	14	Poweshiek.....	8
Carroll.....	6	Ia.....	2	Ringgold.....	5
Cass.....	10	Iowa.....	7	Sac.....	13
Cedar.....	5	Jackson.....	8	Scott.....	3
Cerro Gordo.....	18	Jawner.....	7	Shelby.....	10
Cherokee.....	8	Jefferson.....	5	Sioux.....	16
Chickasaw.....	7	Johnson.....	12	Story.....	18
Clarke.....	4	Jones.....	15	Tama.....	6
Clay.....	13	Keokuk.....	18	Taylor.....	6
Clayton.....	15	Kossuth.....	11	Union.....	12
Clinton.....	2	Lee.....	7	Van Buren.....	18
Crawford.....	10	Linn.....	21	Wapello.....	4
Dallas.....	2	Louisa.....	1	Warren.....	16
Davis.....	7	Lucas.....	10	Washington.....	12
Decatur.....	6	Lyon.....	9	Wayne.....	8
Delaware.....	5	Madison.....	18	Webster.....	16
Des Moines.....	6	Mahaska.....	16	Winnebago.....	8
Dickinson.....	7	Marion.....	18	Winneshiek.....	6
Dubuque.....	7	Marshall.....	7	Woodbury.....	6
Emmet.....	18	Mills.....	6	Worth.....	18
Fayette.....		Mitchell.....		Wright.....	

SYNOPSIS OF STATE PHARMACY REGISTER.

From May 1, 1901, to May 1, 1903.

REGISTRATIONS, REVOCALS, FORFEITURES, ETC.

Number of examinations.....	636
Number of re-examinations.....	412
Total.....	1048

Of this number 290 have passed successful examinations and gold seal certificates have been granted them.

Registered as graduates.....	460
Number of registered pharmacists who have died in two years....	46
Number of certificates canceled at owner's request.....	12
Number of certificates in active force in the state May 1, 1902....	3,576
Number of certificates in active force in the state May 1, 1903....	3,830
Total number registered since passage of the pharmacy law to May 1, 1903.....	7,015

OFFICIAL RULES OF THE COMMISSIONERS OF PHARMACY.

The following rules have been adopted by the commission in accordance with the authority of code, section 2584, as amended by the Twenty-seventh General Assembly, 1898:

RULE 1. For the purpose of facilitating the enforcement of the pharmacy law, the state has been districted, and the counties assigned to each of the commissioners are as follows:

To Commissioner N. T. Hendrix, Columbus Junction, Iowa.—Adair, Adams, Appanoose, Cass, Clarke, Davis, Decatur, Des Moines, Fremont, Henry, Jefferson, Keokuk, Lee, Louisa, Lucas, Madison, Marion, Monroe, Montgomery, Mills, Muscatine, Mahaska, Page, Ringgold, Taylor, Union, Van Buren, Wapello, Warren, Washington, Wayne.

To Commissioner W. L. Leland, Hawarden.—Allamakee, Bremer, Buena Vista, Butler, Cerro Gordo, Cherokee, Chickasaw, Clay, Clayton, Dickinson, Emmet, Fayette, Floyd, Franklin, Hancock, Howard, Humboldt, Kossuth, Lyon, Osceola, Mitchell, Palo Alto, Pocahontas, Plymouth, Sioux, Winnebago, Winneshiek, Woodbury, Worth, Wright.

To Commissioner Fletcher Howard, Des Moines.—Audubon, Benton, Black Hawk, Boone, Buchanan, Calhoun, Carroll, Cedar, Clinton, Crawford, Dallas, Delaware, Dubuque, Greene, Grundy, Guthrie, Hamilton, Hardin, Harrison, Ida, Iowa, Jackson, Jasper, Johnson, Jones, Linn, Marshall, Monona, Polk, Pottawattamie, Poweshiek, Sac, Scott, Shelby, Story, Tama, Webster.

All complaints of violation of the pharmacy law should be referred to the commissioner in whose district they occur.

RULE 2. All examinations in pharmacy will be held in the office of the pharmacy commission, at the capitol building, in the city of Des Moines, on the first Tuesday of February, April, June, August, October, and December, excepting when such day occurs on a legal holiday or a day usually observed as a holiday, when such examination will be held on the Thursday following.

RULE 3. All applications for examination shall be made upon blank forms which will be furnished by the secretary of the commission on request.

RULE 4. All applicants for examination must be 21 years of age, of good moral character, able to speak, read and write the English language, and possessed of sufficient general education. Such applicant must have pursued the study of pharmacy for two full years in actual apprenticeship with

a registered pharmacist in a drug store, or must be a graduate of a recognized medical school, who has engaged for three years last past in the actual and active practice of medicine. But the time actually spent in a recognized school of pharmacy, not exceeding one year, shall be allowed as a credit on above time. Applicants are required to correctly answer 75 per cent of the questions submitted by the commission on examination.

RULE 5. Persons over 18 and under 21 years of age, possessing the other qualifications provided in rule 4, may be registered as assistant pharmacists and will receive certificates accordingly, and when the holder attains his majority, said certificate may be exchanged upon application for a certificate of full registration.

RULE 6. Graduates of pharmacy schools desiring registration will make application upon blanks to be furnished by the commission, accompanied by their diploma, and shall furnish such proof regarding the course of study pursued therein as may be required by the commission.

RULE 7. In all cases where registered pharmacists have two certificates of registration, the last certificate issued will supersede the former, and renewals will be required on the last one only.

RULE 8. Examinations shall be conducted in writing, and the applicant shall be allowed no assistance of any kind, verbal or oral, therein. Any applicant violating this rule and receiving aid in his examination may be summoned by the commissioners and required to submit to a new examination. Should the person so summoned refuse or neglect to obey the order of the commission, or should he appear from such second examination to be incompetent and not possessed of the requisite knowledge and skill, the commissioners will cancel his certificate and strike his name from the register. In like manner they will cancel the certificates of all persons who have secured registry by fraud or false representation.

RULE 9. Whenever application is made to the commission to revoke certificates of registration for violation of any of the laws governing registered pharmacists, the prosecution shall present and file with the secretary of this board a duly certified transcript of the final judgment of conviction, identifying the guilty party by giving the number of his or her certificate of registration. Upon the filing of the application for revocation, with the transcript aforesaid, the commission shall fix a time for the hearing thereof, and shall cause written notice of said complaint to be served upon the accused at least ten days prior to the time fixed for such hearing. Said notice shall in general terms inform the accused of the nature of the charge against him, and of the time when and of the place where the same will be heard. The accused may, on or before the day set for the hearing, show cause why his certificate should not be revoked.

RULE 10. Licenses issued to itinerant vendors of drugs, nostrums, ointments, "or appliances of any kind for the treatment of disease or injury," by this commission, under the provisions of section 2594 of the code, can be transferred by the owner thereof sending the same to the secretary of the commission, who shall record the transfer and make the endorsement upon the license, and the transferee shall be entitled to use the same for the unexpired portion of the term.

RULE 11. All pharmacists are forbidden to sell any bitters, cordials, elixirs, wines, etc., put up in the form of proprietary medicines, where the same can be used as an intoxicant, unless the pharmacist holds a permit authorizing him to sell intoxicating liquors, and sale must be made then only in the same manner as any other intoxicating liquor, by requiring the purchaser to apply in writing therefor upon the regular form.

RULE 12. With this official circular will be found the following official forms:

A—Notice of application for permit.

B—Petition for permit.

C—Bond.

D—Permits to buy, keep and sell intoxicating liquors.

E—Request of purchasers. Series A and B.

F—Permit holders' record of purchases, sales and uses

G—Permit holders' bi-monthly statement to the county auditor of purchases, sales and uses.

H—Permit holders' bi-monthly report and affidavit of request.

These forms have been adopted by the commission, and all pharmacists holding permits to buy, keep and sell intoxicating liquors are required to use forms E, F, G and H.

RULE 13. These rules shall be in force and effect ten days after the date of their publication in the official circular of the commissioners of pharmacy, and when they take effect all previous rules adopted by the commission shall be superseded.

FLETCHER HOWARD,
N. T. HENDRIX,
FRED RUSSELL,
Commissioners.

NOTICE TO PHARMACISTS.

For the guidance and information of pharmacists throughout the state, the commissioners desire to call attention to some of the important provisions of the statute.

First.—That none but registered pharmacists can conduct a drug store or pharmacy; they must be the principals and managers of the store in *all its management*, neither can they allow anyone not registered to sell medicines or poisons, or dispense physicians' prescriptions, except under their direct supervision. (See supreme court decision, *State v. Norton*, 67 Iowa, page 641.)

Second.—Sales of medicines and poisons can only be made by a proprietor, principal or clerk who is a registered pharmacist, and who is required to keep a record of all poisons sold, included in schedule A of section 2593 of the code.

Third.—The certificates of all registered pharmacists must be conspicuously posted in the place of business or pharmacy which they are conducting, or in which they are employed, with the renewal certificate placed in the lower left hand corner, and change of locality certificate (if they have changed their locality) in lower right hand corner of each certificate, to show to the public that their certificate of registration is in full force and effect.

Fourth.—All registered pharmacists when they change their locality are required to notify the secretary of the commission, and have their change of locality recorded, otherwise they are liable to a fine for each month's delinquency, and when so delinquent their certificates are not in full force and effect.

Fifth.—A registered pharmacist's certificate is regarded "in full force and effect," when he holds a renewal of his certificate from March 22d to March 22d of the current year, and change of locality certificate if he has changed his location, unless subsequently forfeited and revoked.

Sixth.—Annual renewals are not required or issued for the first part of a year preceding the 22d day of March; the pharmacist's certificate of registration is evidence that it is in full force and effect from the date of its issuance to the following 22d of March; however, the certified statement up to date of the secretary of the commission of pharmacy, under official seal of said commission, is regarded the best legal evidence as to whether a person is registered or not.

Seventh.—Registered pharmacists are exempt from jury duty. (See section 333, code of 1897.)

Eighth.—The code, section 2593, regulating the sale of poisons, is applicable to all patent preparations and non-secret preparations containing poisons enumerated in schedules "A" and B."

It is unlawful for any person except a registered pharmacist to sell such preparations for any purpose whatever.

Ninth.—The sale of homeopathic medicines, except such as the law denominates "proprietary medicines," properly comes under the regulations of the pharmacy law, and all proprietary medicines containing poisons can be sold only by registered pharmacists as provided by the pharmacy law. The sale, therefore, of any quantity of poison or poisonous preparations enumerated in section 2593 of the code, or of proprietary medicines containing such poisons, can only be made by registered pharmacists. In our opinion, a technical construction is warranted in the sale of a single bottle of these remedies (except as provided in section 2593), for notwithstanding the contents of an entire bottle proved harmless, the purchase and use of several bottles of the same might be fatal.

Tenth.—It is impossible to keep a correct alphabetical list of names of the pharmacists of the state because of the constant change made in the list; we therefore earnestly request all registered pharmacists when corresponding with the commission to give the number of their certificates as well as their names.

FLETCHER HOWARD,

N. T. HENDRIX,

FRED RUSSELL,

Commissioners.

[Code of 1887, as amended by Twenty-seventh General Assembly, 1898.]

CHAPTER 6.

TO REGULATE THE KEEPING AND SALE OF INTOXICATING LIQUORS BY REGISTERED PHARMACISTS.

SEC. 2385. *Permits.*—Persons holding permits may sell and dispense intoxicating liquors, not including malt liquors for pharmaceutical and medicinal purposes, and to permit holders for use and resale by them, only for the purposes authorized in this chapter; they may also sell and dispense alcohol for specified chemical and mechanical purposes, and wine for sacramental uses. Registered pharmacists, physicians holding certificates from the state board of medical examiners, and manufacturers of proprietary medicines may buy from permit holders intoxicating liquors (not including malt) for the purpose of compounding medicines, tinctures and extracts that cannot be used as a beverage; but nothing herein contained shall be construed to authorize the manufacture or sale of any preparation or compound, under any name, form or device, which may be used as a beverage, and which is intoxicating in its character.

SEC. 2386. *Pharmacists—manufacturers of proprietary medicines.*—If any such registered pharmacist or manufacturer of proprietary medicines shall sell, barter, give, exchange, dispose of or use intoxicating liquors in any manner or for any purpose other than authorized in the preceding section, he shall be liable to all the penalties and proceedings provided for in this chapter, and upon proof of such violation by a registered pharmacist, the clerk of the district or superior court shall transmit to the commissioners of pharmacy a certified copy of the record thereof within ten days after its entry, and upon receipt of such certified copy said commissioners may strike his name from the list of registered pharmacists and cancel his certificate. The commissioners of pharmacy are empowered to make such further rules and regulations, not inconsistent with law, with respect to the purchase, keeping and use of intoxicating liquors by registered pharmacists and manufacturers of proprietary medicines, as they shall think proper to prevent the abuses of the privilege, and shall revoke the certificate of registration of any pharmacist for repeated violations of this chapter. Said commissioners are authorized to draw from the state treasury an amount not exceeding 50 per cent of the clear proceeds of all fees collected and paid into the treasury of any county on account of violations of the provisions of this chapter or the chapter regulating the practice of pharmacy, prosecuted by the commissioners, the amount so drawn to be used solely in prosecutions instituted by them for failure to comply with the provisions of such chapters. The court or clerk thereof, before whom any prosecution is instituted or prosecuted by

the commissioners of pharmacy, shall certify to the auditor of state all such cases, and the amount of fees imposed and collected therein. The expenses thus incurred by the commission shall be audited by the executive council, and the amount thereof shall be drawn from time to time upon the warrants of the state auditor.

SEC. 2387. *Application for permit.*—All applicants for permit to sell intoxicating liquors for the purposes allowed in this chapter shall be by petition, signed and sworn to by the applicant, and filed in the office of the clerk of the district or superior court of the county or city in which the buying and selling is to be carried on, at least ten days before the term at which the matter is to be for trial, which petition shall set out the name of the applicant, his residence and business and that for the two previous years, the place, particularly describing it, where the business is to be conducted, that he is a citizen of the United States and of this state, that he is a registered pharmacist, that now and for the six months last past he has been lawfully conducting a pharmacy in the township, town or city wherein he proposes to engage in the business under the permit applied for; that he has not been adjudged guilty of any violation of the law relating to intoxicating liquors within the two years next preceding the making of this application, is not the keeper of a hotel, eating house, saloon, restaurant or place of public amusement, and that he is not addicted to the use of intoxicating liquors as a beverage, and desires a permit to buy, keep and sell liquors for lawful purposes only. If the applicant has previously held a permit which has been revoked, his petition, in addition to the foregoing requirements, shall state that he has not, within the last two years next before making the application, knowingly been engaged, employed or interested in the unlawful manufacture, sale or keeping with intent to sell of intoxicating liquors.

SEC. 2388. *Notice.*—Notice of an application for a permit must be published for three consecutive weeks in a newspaper regularly published and printed in the English language, and of general circulation in the township, town or city where the applicant proposes to conduct the business, or, if none be regularly published therein, then in one of the papers selected by the board of supervisors for the publication of its proceedings, the last publication of which shall be not less than ten nor more than twenty days before the first day of the term at which the hearing is to be had. This notice shall state the name of the applicant, with the firm name, if any, under which he is doing business, the purpose of the application, the particular location of the place where the proposed business is to be carried on, and that the required petition is or will be on file in the clerk's office of the court (naming it) at least ten days before the first day of the term (naming it) when the application will be made. A copy of such notice shall be served upon the county attorney in the same manner and for the same length of time as is required of original notices in said courts.

SEC. 2389. *Hearing—remonstrances.*—Upon the return day of the notice, the court having, from an inspection of the record, ascertained that due and timely service thereof has been made, shall, if no remonstrance has been or is offered to be filed, unless for cause postponed to some other day in the term, proceed to hear and try the application. Any remonstrance against or objection to the granting of the permit must be in writing and filed in the

clerk's office by noon of the first day of the term, unless further time be given, and shall be so filed before the date fixed for the trial. Such remonstrance or objections may be made by any citizen of the county wherein the application is made, specifically stating the reasons therefor, and the court shall fix a day in the term of the trial, and all applications shall be tried at the first term after completed service has been made of the required notice, if the business of the court shall allow. No permit shall be granted unless the court shall find from competent evidence that all the averments in the petition are true, that the reasonable convenience and necessities of the people, considering the population and all the surroundings, make the granting of the permit proper, and that the applicant is possessed of the character and qualifications required, worthy of the trust to be reposed in him, and likely to discharge the same with fidelity. The county attorney shall appear in such cases, and any number of persons, not less than five, filing any remonstrance or objection, may also appear by counsel and resist the application. If more than one permit is applied for in the same locality, the applications shall be heard at the same time, unless for cause shown it be otherwise ordered. If for any reason the application cannot be tried in the term time, the same may be heard by the judge in vacation, at a time to be fixed by the court and made of record, and in all applications for permits the court may grant or refuse any or all applications, as will best subserve the public good.

SEC. 2390. *Bond*.—No permit shall issue until the applicant shall execute to the state a bond in the penal sum of \$1,000, with good and sufficient sureties to be approved by the clerk of the court, conditioned that he will well and truly observe and obey the laws of the state now and hereafter in force in relation to the sale of intoxicating liquors, that he will pay all fines, penalties, damages and costs that may be assessed or recovered against him for a violation of such laws during the time for which the permit is granted, and the principal and sureties in said bond shall be liable thereon, jointly and severally, for all civil damages and costs that may be recovered against the principal in any action brought by a wife, child, parent, guardian, employer or person under the provisions of this chapter. The bond, after being approved and recorded by the clerk, shall be deposited with the county auditor, and suit may be brought thereon at any time by the county attorney, or by any person for whose benefit the same is given. The clear proceeds of all other money which may be collected for breaches of the bond shall go to the school fund of the county. If at any time the sureties on the bond shall file with the court or clerk a written request for release, or become insolvent, or be deemed insufficient by the court granting the permit, or its clerk, such court or clerk shall require a new bond to be executed within a reasonable time to be fixed. If the permit holder fails or neglects to furnish a new bond within the time so fixed the permit shall from that date become null and void.

SEC. 2391. *Oath of applicant*.—In addition to giving the bond required, the applicant shall take and subscribe the following oath, which shall be indorsed upon the bond: "I, ...do solemnly swear (or affirm) that I will well and truly perform all and singular the conditions of the within bond, and keep and perform the trust confided in me to purchase, keep and sell intoxicating liquors. I will not sell, give or furnish to any

person any intoxicating liquors otherwise than as provided by law, and especially I will not sell or furnish any intoxicating liquors to any person who is not known to me personally, or duly identified, nor to any minor, intoxicated person, or persons who are in the habit of becoming intoxicated; and I will make true, full and accurate returns of all certificates and requests made to or received by me as required by law; and said returns shall show every sale and delivery of such liquors made by me, or for me, during the months embraced therein, and the true signature to every request received and granted; and such returns shall show all the intoxicating liquors sold or delivered to any and every person, as returned."

SEC. 2392. *Permit issued.*—Upon taking said oath and filing said bond, the clerk of the court granting the same shall issue a permit to the applicant, authorizing him to keep and sell intoxicating liquors as in this chapter provided. The permit so issued shall specify the building, give the street and number or location in which intoxicating liquors may be sold by virtue of the same, and the length of time the same shall be in force, unless sooner revoked. *Provided*, that upon the lease or destruction of the building where such business is conducted, or for other good and sufficient cause shown, consent in writing of the bondsmen having been obtained thereof, or a new bond given, the district court of the county which granted said permit, or a judge of said court, may change the place specified in said permit to some other place in the same city or township, upon motion thereof. A copy of said motion, and notice of the time when and the place where the same shall be heard, shall be given to the county attorney of the county where said place is situated at least five days before said hearing.

SEC. 2393. *Record—costs.*—The clerk of the court granting the permit shall preserve, as part of the record and files in his office, all petitions, and other papers except bonds pertaining to the granting or revocation of permits, and keep suitable books in which bonds and permits shall be recorded. The books shall be furnished by the county like other public records. Whether said permit be granted or refused, the applicant shall pay the costs incurred in the case, and when granted he shall make payment before any permit issue, except the court may tax the cost of any witnesses summoned by private persons resisting said application, and the fees for serving such subpoenas, to such persons, when it is shown that such witnesses were summoned maliciously or without probable cause to believe their evidence material. The fees in such cases shall be as provided in actions at law in the district court.

SEC. 2394. *Requests to purchase.*—Before selling or delivering any intoxicating liquors to any person, a request must be signed by the applicant, in his true name, truly dated, stating the applicant is not a minor, his residence, for whom and whose use the liquor is required, and his true name and residence, and, where numbered, by street and number if in a city, the amount and kind required, the actual purpose for which the request is made and for what use desired, and that neither the applicant nor the person for whose use requested habitually uses intoxicating liquors as a beverage, and attested by the permit holder who receives and fills the request. The request shall be refused unless the permit holder has reason to believe the statement to be true, and in no case granted unless the permit holder filling it personally knows the person applying is not a minor, intoxicated, nor in

the habit of using intoxicating liquors as a beverage; or if the applicant is not so personally known, before filing the order or delivering the liquor, he shall require identification, and the statement in writing of a reliable and trustworthy person, of good character and habits, known personally to him, that the applicant is not a minor, nor in the habit of using intoxicating liquors as a beverage, and is worthy of credit as to the truthfulness of the statements in the application; and this statement so made shall be signed by the witness in his own name, stating his residence correctly.

SEC. 2395. *Penalties.*—If any person shall make any false or fictitious signature, or sign any name other than his own to any paper required to be signed, or make any false statement in any paper or application signed to procure liquors, the person so offending shall be punished by a fine of not less than \$20 nor more than \$100 and costs of prosecution, and shall be committed until said fine and costs are paid, or shall be imprisoned not less than ten nor more than thirty days. If any permit holder or his clerk shall make false oath touching any matter required to be sworn to, the person so offending shall be punished as provided by law for perjury. If any person holding a permit under this chapter shall purchase or procure any intoxicating liquor otherwise than as herein authorized, or make any false return to the county auditor, or use any request for liquors for more than one sale, he shall be guilty of a misdemeanor and punished accordingly.

SEC. 2396. *Transportation by permit holder.*—Every permit holder is hereby authorized to ship to registered pharmacists and manufacturers of proprietary medicines intoxicating liquors to be used by them for the purposes authorized by law. All railway, transportation and express companies and other common carriers are authorized to receive and transport the same upon presentation of a certificate from the clerk of the district or superior court of the county where the permit holder resides, that such person is permitted to ship intoxicating liquors under the law of this state.

SEC. 2397. *Returns by permit holder.*—On or before the 15th day of January, March, May, July, September and November of each year each permit holder shall make full returns to the county auditor under oath, of all requests filled by him and his clerks during the two preceding months, which oath shall be in the following form: "I....., being duly sworn, on oath state that the requests for liquors herewith returned are all that were received and filled at my pharmacy (or place of business) during the months of..... A. D....; that I have carefully preserved the same, and that they were filled up, signed and attested at the date shown hereon, as provided by law; that said requests were filled by delivering the quantity and kinds of liquors required, and that no liquors have been sold or dispensed under color of my permit during said months except as shown by the requests herewith returned, and that I have faithfully observed and complied with the conditions of my bond and oath taken by me thereon indorsed, and with the laws relating to any duties in the premises."

SEC. 2398. *Account of purchase and sales.*—Every permit holder shall keep strict account of all liquors purchased or procured by him in a book kept for that purpose, which shall be subject at all times to the inspection of the commissioners of pharmacy, the county attorney and grand juror, sheriff or justice of the peace of the county, and such book shall show of

whom such liquors were purchased or procured, the amount and kind, the date of receipt and amount sold; also the amount on hand of each kind for each two months, and at the same time he returns requests to the county auditor he shall file a statement of such account with such auditor, except that the items of sales need not be embraced therein, but the aggregate amount of each kind shall be verified. All forms necessary to carry out the provisions of this chapter not otherwise provided for shall be as may be provided by the commissioners of pharmacy.

SEC. 2399. *Illegal sales by permit holder—evidence.*—Every permit holder or his clerk shall be subject to all the penalties, forfeitures and judgments, and may be prosecuted by all the proceedings and actions criminal and civil, whether at law or in equity, provided for or authorized by this chapter and the permit shall not shield any person who abuses the trust imposed by it or violates the law. In case of conviction in any proceeding, civil or criminal, the liquors in possession of the permit holder shall by order of the court be destroyed, and on the trial of an action or proceeding against any person for manufacturing, selling, giving away or keeping with intent to sell intoxicating liquors in violation of law, or for any failure to comply with the conditions or duties imposed by law, the requests for liquors and returns made to the auditor, the quantity and kinds of liquors sold or kept, purchased or disposed of, the purpose for which liquors were obtained by or from him and for which they were used, the character and habits of sobriety or otherwise of the purchasers, shall be competent evidence, and may be considered, so far as applicable to the particular case, with any other recognized, competent and material facts and circumstances bearing on the issues involved in determining the ultimate facts. In any suit, prosecution or proceeding under this chapter the court shall compel the production in evidence of any books or papers required to be kept, and shall compel any permit holder, his clerk, or any person who has purchased liquors of either of them, to appear and give evidence, but such oral evidence shall not be used against such person or witness on the trial of any criminal proceeding against him.

SEC. 2400. *Revocation of permit.*—Permits shall be deemed trusts reposed in the recipients, and may be revoked upon sufficient showing by order of a court or judge. Complaint may be presented at any time to the district or superior court, or a judge thereof, which shall be in writing and signed and sworn to by three citizens of the county in which the permit was granted. A copy of the complaint shall, with a notice in writing of the time and place of hearing, be served on the accused five days before the hearing, and if the complaint is sufficient, and the accused appear and deny the same, the court or judge shall proceed without delay, unless continued for cause, to hear and determine the controversy. If continued or appealed at the instance of the permit holder, his permit may, in the discretion of the court, be suspended pending the controversy. The complainant and accused may be heard in person or by counsel, or both, and proofs may be offered by the parties; and if it shall appear upon such hearing that the accused has in any way abused the trust, or that liquors are sold by the accused or his employees in violation of law, or dispensed unlawfully, or he has in any proceeding, civil or criminal, within the last two years, been adjudged guilty of violating any of the provisions of this chapter, the court or judge shall revoke and set

aside the permit; the papers and order in such case shall be immediately returned to and filed by the clerk of the court, and, if heard by a judge, the order shall be entered of record as if made in court; and if in this or any other proceeding, civil or criminal, it shall be adjudged by the court or judge that any registered pharmacist, proprietor, or clerk, has been guilty of violating any provision of this chapter, such adjudication may be by the commissioners of pharmacy regarded as sufficient, if repeated, to work a forfeiture of his certificate of registration. It shall be the duty of the clerk to forward to the commissioners of pharmacy transcripts of such judgments or orders without charge therefor, and as soon as practicable after final judgment or order has been made and entered.

SEC. 2401. *How business conducted—clerks—physicians.*—A permit holder may employ not more than two registered pharmacists as clerks to sell intoxicating liquors in conformity to the permit and the law; but in such cases the acts of clerks in conducting the business shall be considered the acts of the permit holder, who shall be liable therefor as if he had personally done them, and in making returns, the verification of such requests as may have been received, attested and filed by the clerk must be made by such clerk, and the clerk who transacted any of the business under the permit must join in the general oath required of the employer, so far as relates to his own connection therewith. If for any cause a registered pharmacist who holds a permit shall cease to hold a valid and subsisting certificate of registration or renewal thereof, his permit shall be forfeited and be null and void. Nothing contained in this chapter shall be construed to prevent licensed physicians from in good faith dispensing liquors as medicines to patients actually sick and under their treatment. In case a permit holder shall die, his personal or legal representative may continue the business, subject to the provisions thereof, through the agency of any reputable registered pharmacist, upon the approval of the court granting such permit, or the clerk thereof, and the giving of a bond as hereinbefore provided. A partner who is a registered pharmacist, not holding a permit, shall have the same rights and be subject to the same restrictions as clerks; and for whose acts the permit holder shall be held responsible the same in all respects as for his clerks.

SEC. 2402. *Intoxication punished.*—If any person shall be found in a state of intoxication he is guilty of a misdemeanor, and any peace officer shall, without a warrant, take him into custody and detain him in some suitable place until an information can be made before a magistrate, and a warrant of arrest issued, under which he shall at once be taken before the magistrate issuing the same, or, if for any reason he cannot act, to the next nearest one, where he shall be tried, and, if found guilty, shall be fined in the sum of not less than \$5 nor more than \$25 and costs of prosecution, or imprisoned in the county jail not more than thirty days, the penalty, or any portion of it, may be remitted by a magistrate before whom the trial is had, and the accused discharged from custody, upon his giving information in writing and under oath, stating when, where and of whom he purchased or received the liquor which produced the intoxication, and the kind and character of this liquor, and, in addition, giving bail for his appearance before any court to give evidence in any action or complaint to be commenced or preferred against such party for furnishing the same.

SEC. 2403. *Selling or giving to minors or intoxicated person or persons in the habit of becoming intoxicated.*—No person by himself, agent or otherwise, shall in any manner procure for, or shall sell or give any intoxicating liquors to any minor for any purpose, except upon written order of his parent, guardian or family physician, or give to or in any manner procure or sell the same to any intoxicated person, or one in the habit of becoming intoxicated. Any person violating the provisions of this section shall forfeit and pay the sum of \$100 00 for each offense, to be collected by action against him; or, if a permit holder, against him and the sureties on his bond. Such action may be brought by any citizen of the county. One-half of the amount so collected shall go to the informer and one-half to the school fund of the county.

SEC. 2432. *Payment of mulct tax.*—Any permit holder selling intoxicating liquors as a beverage shall pay the tax provided for in this section.

CHAPTER 18.

OF PRACTICE OF PHARMACY.

SECTION 2584. *Commissioners—powers.*—The commission of pharmacy shall consist of three competent pharmacists who have been for the preceding five years residents of the state and engaged in practicing pharmacy, one of whom shall be annually appointed by the governor and hold office for three years and until his successor is appointed and qualified. The commission shall have power to make all needed regulations for its government and for the proper discharge of its duties under this chapter, the same to be done without expense to the state, save the necessary blanks and stationery, which shall upon requisition, be furnished by the secretary of state, and make such other regulations not inconsistent with law and as authorized in this code, respecting the purchase, keeping and use of intoxicating liquors by registered pharmacists not permit holders, as may be required for the prevention or abuse of the trust reposed in them, and such other matters as may be hereinafter specially enumerated.

SEC. 2585. *Secretary and treasurer.*—The commission of pharmacy shall annually, on the first Monday in May, elect a suitable person, who shall not be a member of said board, and who shall be known as secretary and treasurer; said secretary and treasurer shall enter upon the discharge of his duties as soon as he shall have filed with the secretary of state a good and sufficient bond in the penal sum of \$3,000, signed by at least two sureties, who shall justify in the aggregate to double the amount of the said bond, and which shall bear upon its face the approval of the governor. The salary of said secretary and treasurer shall not exceed \$1,500 per annum.

SEC. 2586. *License fees.*—The secretary and treasurer shall keep in his office a book known as the "commissioners of pharmacy license fee book," which shall be made with ruled columns and printed headings, showing the date, the name of the person paying, and the amount of each license and fee paid, in which he shall enter all fees for licenses received by him, and on the first Monday of each month he shall file with the auditor of state a true

statement thereof for the previous month, properly sworn to by him, and shall quarterly pay into the state treasury, on the first day of January, April, July and October of each year, the amount of license fees payable by law into such treasury.

SEC. 2587. *Records—compensation.*—The books, accounts, vouchers and funds belonging to or kept by said board of pharmacy shall at all times be open or subject to the inspection of the governor, or any committee appointed by him. Each commissioner of pharmacy shall receive as full compensation for his services the sum of \$5 for each day actually employed in the discharge of his official duties, together with his actual traveling expenses in performing said duties, all of which shall be paid from the fees of the office, and each commissioner shall file with the auditor of state, at the end of each quarter of his official year, an itemized statement under oath of his actual time in days employed in the discharge of his duty and traveling expenses incurred in the performance of his duty for such quarter.

SEC. 2588. *Registered Pharmacists.*—No person not a registered pharmacist shall conduct the business of selling at retail, compounding or dispensing drugs, medicines, or poisons, or chemicals for medicinal use, or compounding or dispensing physicians' prescriptions as a pharmacist, nor to allow anyone who is not a registered pharmacist to so sell, compound or dispense such drugs, medicines, poisons or chemicals, or physicians' prescriptions; except such as are assistants to and under the supervision of one who is a registered pharmacist, and physicians who dispense their own prescriptions only; but no one shall be prohibited by anything contained in this chapter from keeping and selling proprietary medicines and such other domestic remedies as do not contain intoxicating liquors or poisons, nor from selling concentrated lye or potash having written or printed on the package or parcel its true name and the word "poison," sales of which need not be registered. Whoever violates either provision of this section, for the former shall pay \$5 for each day of its violation, to be recovered in an action in the name of the state, brought by the county attorney under the direction of the commission, and for the latter shall be guilty of a misdemeanor, and punished accordingly. In actions or prosecutions under this chapter, it need not be proven that the defendant has not a pharmacist's certificate, but such fact shall be a matter of defense.

SEC. 2589. *Examinations—registration.*—The commission, at such times and places as it may select, and in such manner as it may determine upon, shall examine all persons desiring to engage in and conduct business as registered pharmacists, as contemplated in the preceding section, and, if found competent, the applicant's name shall be entered in the registry book of certificate holders. ("Graduates of pharmacy holding a diploma from the State University, or from any school or college of pharmacy requiring a course of study and laboratory work equivalent to that prescribed by the said State University in its catalogue for the year 1897-98, may be registered without examination.") (Pharmacists thus registered have the sole right to keep and sell all medicines and poisons except intoxicating liquors.)

SEC. 2590. *Registration and examination fees.*—Each person furnished a certificate and registered without examination shall pay to the commission \$2, and each and every person whom they examine orally, or whose answers to a schedule of questions are returned subscribed under oath, the sum of

\$5, which shall be in full for all services. And in case the examination of said person shall prove defective and unsatisfactory, and his name not be registered, he shall be permitted to present himself for re-examination within any period not exceeding twelve months next thereafter, and no charge shall be made for re-examination. The said commissioners are authorized to administer oaths pertaining to their said office and take and certify the acknowledgments of instruments in writing. After registration, an annual fee of \$1 for a renewal certificate shall be paid on or before the 22d day of March by all pharmacists who continue in business, and the conduct of such business without such renewal shall be a misdemeanor.

SEC. 2591. *Registry book.—certificate displayed.*—The commission shall keep a registry book in which shall be recorded the names and places of residence of all certificate holders, with the date of such certificate, which shall hold good for one year, and no longer without renewal. Renewals shall be granted upon the payment of the annual fee fixed in the preceding section. Should a certificate holder change his residence, upon notice thereof such change shall be noted in the registry book. Each certificate holder shall keep displayed in his place of business his registration certificate. A failure to comply with this requirement shall be a misdemeanor.

SEC. 2592. *Sale of adulterated drugs.*—Registered pharmacists shall be responsible for the quality of all drugs, chemicals and medicines which they may sell or dispense, except those sold in the original packages of the manufacturer, and those known as patent medicines. If any such pharmacist shall knowingly adulterate or cause to be adulterated any drugs, chemicals or medical preparations by him kept for sale or sold, he shall be guilty of a misdemeanor.

SEC. 2593. *Sale of poisons.*—No person shall sell at retail any poisons enumerated in schedules A and B, except in dispensing poisons in usual quantities or doses upon the prescription of a physician, as follows: Schedule A, arsenic and its preparations, corrosive sublimate, white precipitate, red precipitate, biniodide of mercury, cyanide of potassium, hydro cyanic acid, strychnia and other poisonous vegetable alkaloids and their salts, essential oil of bitter almonds, opium and its preparations except paregoric and other preparations of opium containing less than two grains to the ounce. Schedule B, aconite, belladonna, colchium, conium, nux vomica, henbane, savin, ergot, cotton root, cantharides, creosote, digitalis, and the pharmaceutical preparations, croton oil, chloroform, chloral hydrate, sulphate of zinc, mineral acids, carbolic acid and oxalic acid; unless the package containing such poisons has placed thereon, and also the outside wrapper or cover, the name of the article, the word "poison," and the name and place of business of the seller; nor sell or deliver such poison unless upon due inquiry it be found that the party receiving it is aware of its character and represents it to be used for proper purposes; nor sell or deliver any of the poisons included in schedule A without also, before delivery of the same, causing an entry to be made in a book kept for that purpose, of the date of sale, the name and address of the purchaser, the name of the poison, the purpose for which it was represented to be required, and the name of the dispenser, which book shall be open for inspection by the proper authorities and preserved for at least five years, the entry of each such sale to be signed by the dispenser. Any person violating any of the

provisions of this section, except as otherwise provided by law, shall be adjudged guilty of a misdemeanor and be punished by a fine of not less than \$25 nor more than \$100, or by imprisonment in the county jail for not less than thirty days nor more than sixty days, or by both fine and imprisonment, in the discretion of the court.

SEC. 2594. *Itinerant vendors of drugs.*—Any itinerant vendor of any drug, nostrum, ointment, or appliance of any kind for the treatment of any disease or injury, and all those who by any method publicly profess to treat or cure diseases, injury, or deformity, shall pay to the treasurer of the commission of pharmacy an annual fee of \$100, upon the receipt of which the secretary of the commission shall issue a license for one year from its date; \$2,000 annually of the money arising from the license fund, or so much as may be needed, shall be devoted to defraying the expenses of the commission, and any balance remaining shall be paid into the state treasury. Said commission shall, on the first day of January of each year, make a verified and itemized statement in writing to the auditor of state, of all receipts and expenditures of money coming into their hands by virtue of their office. Any violation of this section shall be a misdemeanor, and any person shall, upon conviction thereof, pay a fine of not less than \$100, nor more than \$200. In actions or prosecutions under this chapter, it need not be proven that the defendant has not a license, but such fact shall be a matter of defense.

SEC. 2595. *Penalties for false representation.*—If any person shall procure or attempt to procure a certificate of registry for himself or another by means of false representations or device, or without being a registered pharmacist shall conduct a place for retailing, compounding or dispensing drugs, medicines or chemicals, or for compounding or dispensing physicians' prescriptions, or shall use or exhibit the title of registered pharmacist, and each several day a place shall be so used shall be held to be a separate and several offense.

SEC. 2596. *Revocation of certificate.*—When a registered pharmacist has been convicted of a violation of the provisions of this chapter, in addition to the other penalties provided by law, the commission, in its discretion, may revoke his certificate of registry.

ACT RELATING TO THE SALE OF COCAINE AND PROVIDING PUNISHMENT FOR ILLEGAL SALE THEREOF.

AMENDATORY OF CHAPTER 18 RELATING TO PRACTICE OF PHARMACY.

Be it Enacted by the General Assembly of the State of Iowa:

SECTION 1. No one, by himself, clerk, employe or agent, shall either directly or indirectly, sell or give away any cocaine, or preparation containing cocaine, except on the written prescription of a registered physician for medical purposes, and no such prescription shall be refilled except upon the written order of a physician. However, nothing in this act shall be construed to prevent the sale thereof to a wholesale or retail dealer in drugs nor a registered physician, or licensed dentist for use in the practice of his profession.

SEC. 2. Any one found guilty of violating the provisions of section one, of this act, for the first offense, shall pay a fine of not less than twenty-five dollars, and not more than one hundred dollars and costs of prosecution. For the second offense and each subsequent offense, he shall pay on conviction thereof, a fine of not less than one hundred dollars, and not more than three hundred dollars, or imprisonment in the county jail not to exceed three months. Any clerk, employe or agent, violating, or aiding in the violation of section one, shall be charged and convicted as principal.

SEC. 3. Peace officers shall see that the provisions of this act are faithfully executed within their respective jurisdictions, and when they are informed, or have reasons to believe that this act has been violated, and the proof thereof can be had, they shall file information to that effect against the offending party before a magistrate, who thereupon shall proceed according to law. The county attorney shall prosecute the violators of this act.

SEC. 4. This act, being deemed of immediate importance, shall take effect and be in force, after its publication in the *Iowa State Register* and the *Des Moines Leader*, newspapers.

Approved March 22.

Published, March 25, 1902.

OFFICIAL FORMS.

*In accordance with Chapter 6 of the Code of 1897, adopted October 1, 1901.
(See Regulation No. 13.)*

[OFFICIAL FORM A.]

PUBLICATION NOTICE OF APPLICATION FOR PERMIT.

*In the District (or Supreme) Court of the State of Iowa.....County
(or City).*

In the matter of the application of..... }
a registered pharmacist, for a permit to buy, keep } Term, 190..
and sell intoxicating liquors. }

NOTICE.

To Whom it May Concern: Notice is hereby given that the application of the undersigned.....a registered pharmacist, No doing business under the firm name of....., of, in county of state of Iowa, praying for a permit to buy, keep and sell intoxicating liquors (*particularly describe the county*)..... in county of....., state of Iowa, will be on file in the office of the clerk of the district (or superior) court of said county (or city) on or before the day of.....190., and that said cause will come on for hearing in said court at the.....term of said court to be begun and held at..... on the....day of....., 190..*Applicant.*

[OFFICIAL FORM B.]

PETITION FOR PERMIT.

*In the District (or Superior) Court of the State of Iowa, in and for.....
County (of City).*

In the matter of the application of..... }
a registered pharmacist, to buy, keep and sell } Term 190..
intoxicating liquors. }

Comes now....., a registered pharmacist, and prays that he be granted a permit to buy, keep and sell intoxicating liquors for lawful purposes at the place hereinafter designated, and in support of this petition alleges:

1st. That he is a citizen of the United States, the state of Iowa, and a resident of.....county, that he is now engaged in the business of.....and

for the two years next prior to the filing of this petition he has been engaged in the business of....., that he is a registered pharmacist No..... of the state of Iowa doing business under the firm name of.....that his certificate of registration is in full force and effect for the town of and that he is now and for the last six months has been lawfully conducting a pharmacy in.....township (or town of.....), in the county of..... and state of Iowa, as proprietor of such pharmacy, and that he has not been adjudged guilty of violating the laws relating to intoxicating liquors within the last year next preceding the filing of this petition, that he is not the keeper of a hotel, eating house, saloon, restaurant or place of public amusement, that he is not addicted to the use of intoxicating liquors as a beverage, and that he desires a permit to purchase, keep, and sell such liquors for lawful purposes only, for the period of.....years from date of issue of said permit, and that said business is to be conducted at.....Iowa, No..... street (or) lot....., (block).....in said..... county. Applicant.

STATE OF IOWA,
.....COUNTY. }

I, ..., first being duly sworn depose and say that I am the applicant named in the foregoing petition, that I have read the foregoing, my petition herein, and know the contents thereof, and that all the allegations thereof are true as I verily believe.

.....
Subscribed in my presence and sworn to before me by the said.....
....., on this.....day of....., A. D. 190..
....., Notary Public.

[OFFICIAL FORM C.]

BOND (MUST BE RECORDED).

Know all men by these presents, that we,.....as principal and.....as sureties, are held and firmly bound unto the state of Iowa in the penal sum of one thousand dollars, for the payment of which we bind ourselves, our heirs, executors and administrators.

The condition of this obligation is such that, whereas, the above bound was on the.....day of.....190..., by the district (or superior) court of.....county (of city), state of Iowa, granted a permit to buy, keep and sell intoxicating liquors for lawful purposes at (particularly describe the place)..... Now, if the said shall well and truly observe and obey the laws of Iowa, now or hereafter in force in relation to the sale of intoxicating liquors, and pay all fines, penalties, damages and costs that may be assessed or recovered against him for the violation of such laws during the time of the continuance of said permit, then this bond to be void, otherwise to be and remain in full force and effect.

Signed this.....day of.....A. D. 190..

.....Applicant.
.....
.....

STATE OF IOWA,
.....COUNTY. } ss.

I, ..., do solemnly swear (or affirm) that I will well and truly perform all and singular the conditions of the within bond, and keep and perform the trust confided in me to purchase, keep and sell intoxicating liquors. I will not sell, give or furnish to any person any intoxicating liquors otherwise than as provided by law, and especially, I will not sell or furnish any intoxicating liquors to any person who is not known to me personally or duly identified; nor to any minor, intoxicated person or persons who are in the habit of becoming intoxicated; and I will make true, full and accurate returns of all certificates or requests made to or received by me as required by law; and said returns shall show every sale and delivery of such liquors made by or for me during the months embraced therein, and the true signature to every request received and granted; and such returns shall show all the intoxicating liquors sold or delivered to any and every person as returned.

Subscribed in my presence and sworn to before me by the said... ..
.....on this.....day of , A. D. 190..

.....
Clerk of the Court.

(To go on back of bond.)

QUALIFICATIONS OF SURETIES.

STATE OF IOWA,
.....COUNTY, } ss.

We, the undersigned, first being duly sworn, depose and say, and each for himself deposes and says that he is one of the sureties whose name is subscribed to the within and foregoing bond; that he is a resident of the state of Iowa; that he is worth double the sum secured by said bond beyond the amount of his debts and liabilities, to-wit: the sum of.....dollars; and that he has property liable to execution in said state equal to the sum secured in said bond, to-wit: the sum of.....dollars.

.....
.....
.....
Subscribed in my presence and sworn to before me by.....
this.....day of....., A. D. 190..

.....
Clerk of the Court.

—
[OFFICIAL FORM D.]

PERMIT.

Whereas,.....a registered pharmacist, of the state of Iowa, certificate No....., (of the firm of).....
did on the.....day of.....A. D. 190., publish his

notice and file in the office of the clerk of the district (or superior) court in and for.....county (or city), Iowa, his petition and bond, as provided by chapter 6, code of 1897, for a permit to buy, keep and sell intoxicating liquors for pharmaceutical and mechanical purposes, alcohol for specified chemical medicinal purposes, and wine for sacramental purposes, but for no other purpose whatever, in the (township, town or ward) of.....(*describe street, block and number*) in the county of....., state of Iowa.

And it appearing that the said registered pharmacist's certificate of registration, No....., is in full force and effect for the town of, above mentioned, and in accordance with the pharmacy law of the state of Iowa, and the court being duly satisfied that the requirements of the law have in all respects been fully complied with, and that said applicant is entitled to a permit as provided by chapter 6, code of 1897, it is ordered that he be and is hereby authorized, from and after the day of....., 190., to buy, keep and sell intoxicating liquors for pharmaceutical and medicinal purposes, and alcohol for specified mechanical purposes, and wine for sacramental purposes, but for no other purpose whatever, at the place aforesaid, for the period of.....years, unless this permit is otherwise revoked according to law.

.....
Clerk of District (or Superior) Court,
County (or City), Iowa

[OFFICIAL FORM B.—SERIES A.]

REQUEST OF PURCHASERS.

....., Iowa, ...190...

To.....*Reg. Phar. No.*.....

I hereby make request for the purchase of the following liquors:

AMOUNT.

KIND.

.....
 My true name is....., I am not a minor, and I reside in township (or town) of.....
 at No....., in the county of....., state of..... The actual purpose for which this
 (If for applicant, say myself; if for another give name, age and residence.)
 request is made is to obtain the said liquor for.....
 and the same is desired for.....use, and neither myself nor the said
habitually uses intoxicating liquors as a beverage.

(Signature of purchaser).....

Attested by.....

Reg. Phar. No.....

[OFFICIAL FORM E—SERIES B.]

CERTIFIED REQUEST OF PURCHASERS.

To.....*Iowa*.....190..

.....*Reg. Phar. No*.....

I hereby make request for the purchase of the following intoxicating liquors:

AMOUNT.

KIND.

.....
.....
.....

My true name is....., I am not a minor, and I reside in.....township (or town) of.....
at No....., in the county of....., state of..... The actual purpose for which this request is
made is to obtain the said liquor for.....
and the same is desired for.....use, and neither myself nor the said
habitually uses intoxicating liquors as a beverage.

(Signature of purchaser).....

I, ..., hereby certify that I am acquainted with....., the applicant for the
purchase of the foregoing described liquors, and that said.....is not a minor and is not in the habit
of using intoxicating liquors as a beverage and is worthy of credit as to the truthfulness of the statements in the fore-
going request, and my residence is....., No....., Street.....

(Signature of certifier).....

Attested by.....
Reg. Phar. No.....

[OFFICIAL FORM G.]

PERMIT HOLDER'S BI-MONTHLY STATEMENT TO COUNTY AUDITOR OF PURCHASES, SALES AND USE OF
INTOXICATING LIQUORS.

For the month of.....and....., 190...

OF WHOM PUR- CHASED	DATE OF RECEIPT.	AMOUNT PUR- CHASED.		KIND.	AMT. ON HAND AT COMMENC'T OF THE MONTH OF.....		TOTAL ON HAND AND RECEIVED.		AMOUNT SOLD.		AMOUNT USED.		AM'T ON HAND AT THE END OF THE MONTH OF	
		Gals.	Qts		Gals.	Qts	Gals.	Qts	Gals.	Qts.	Gals.	Qts.	Gals.	Pts.
.....				Alcohol	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....														
.....				Whisky	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....				Brandy	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....				Gin.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....				Wine	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

STATE OF IOWA, }
.....COUNTY, } ss.

..... of town..... county, state of Iowa, being duly
sworn, on oath depose and say that the above and foregoing statement of purchases, aggregate sales and uses of intoxicating
liquors, under my permit for the months of.....and....., 190..., is a true and correct statement as I verily believe

Subscribed in my presence and sworn to before me by..... on this
.....day of....., A D. 190...

.....
County Auditor or Notary Public.

[OFFICIAL FORM H.]

PERMIT HOLDER'S BI-MONTHLY REPORT OF REQUESTS AND
AFFIDAVIT.

STATE OF IOWA, }
..... COUNTY. } ss.

I, ..., Reg. Phar. No....., being duly sworn on oath state that the requests for liquors herewith returned are all that were received and filed at my pharmacy (or place of business) under my permit during the months of and....., 190..., that I have carefully preserved the same and that they were filled up, signed and attested at the date shown thereon as provided by law, that said requests were filled by delivering the quantity and kind of liquors required and that no liquors have been sold or dispensed under color of my permit during said months except as shown by the requests herewith returned, and that I have faithfully observed and complied with the conditions of my bond and oath taken by me thereon endorsed, and with all the laws relating to my duties in the premises.

STATE OF IOWA, }
..... COUNTY. } ss.

I, ..., Reg. Phar. No....., first being duly sworn, depose and say that I am clerk for....., and that no liquors have been sold, dispensed or disposed of by me, in any manner, during the months of and....., except as shown by the requests attested by me, filed herewith and included in the report of the said.....

STATE OF IOWA, }
..... COUNTY. } ss.

I, ..., Reg. Phar. No....., first being duly sworn, depose and say that I am clerk for....., and that no liquors have been sold, dispensed or disposed of by me, in any manner, during the months of and except as shown by the requests attested by me, filed herewith and included in the report of the said.....

The foregoing statement (was or were) subscribed to in my presence, as indicated therein, and sworn to before me by the said..... and said.....and said.....on this.....day of....., A. D. 190..

.....
County Auditor or Notary Public.

CERTIFICATE.

IOWA COMMISSIONERS OF PHARMACY. }
OFFICE OF THE SECRETARY, }
STATE CAPITOL, DES MOINES, IOWA. }

I, Charles W. Phillips, Secretary of the Commissioners of Pharmacy for the State of Iowa, hereby certify that the foregoing abstract of the state pharmacy register is copied from the original register on file in this office, and that the same is true and correct.

In testimony whereof, I have hereunto set my hand and affixed the seal of the commission this 1st day of October, A. D. 1903.

CHARLES W. PHILLIPS,
Secretary of the Commission.

ABSTRACT OF STATE PHARMACY REGISTER.

Showing certificates now in force.

Number of cer- tificates.	NAME.	DATE OF REGISTRA- TION.	HOW REGISTERED.	PLACE OF REGISTRA- TION.	LATEST REPORTED ADDRESS.	REMARKS.
121	Arts, David.	June 14, 1890	As owner.	Donnellson.	Red Oak.	
232	Anderson, A. A.	June 22, 1890	As assistant.	Boone.		
328	Atkins, J. B.	June 8, 1890	As owner.	Council Bluffs.		
873	Arnold, C. V.	June 4, 1890	As owner.	Mt. Pleasant.		
1248	Ayers, W. L.	June 15, 1890	As owner.	Sheldon.		
1294	Agnew, David G.	June 18, 1890	As owner.	Wilton Junction.		
1688	Archer, William H.	August 12, 1890	As owner.	Bear Grove.		
1687	Art, Julius H.	July 28, 1890	By examination.	Fort Madison.	Adair.	Out of business.
1709	Arnold, Charles.	August 4, 1890	By examination.	Creston.	Fort Madison.	
1981	Alexander, R. H.	October 27, 1891	By examination.	Oskaloosa.	Waverly.	
2001	Allen, B. F.	April 12, 1891	By examination.	Wellman.	Oklahoma, T.	
2241	Anderson, E.	October 8, 1891	By examination.	Mason.	Kalona.	
2341	Alexander, W. A.	September 12, 1891	By examination.	Leon.	Ruthven.	
2479	Arthur, Charles H.	May 8, 1892	By examination.	Webster City.	Webster City.	Out of business.
2506	Adams, Charles R.	August 28, 1892	By examination.	Cedar Rapids.		
2531	Alexander, T. R.	February 17, 1893	By examination.	Marion.		
2605	Adair, Charles R.	April 17, 1893	By examination.	Logan.	Vinton.	
2726	Alexander, D. E.	July 6, 1894	By examination.	De Bots.		
2788	Arnold, R. R.	March 15, 1894	By examination.	Humeston.		
8086	Anders, F. W.	June 15, 1896	By examination.	Des Moines.		
8129	Ashury, T. P.	February 28, 1897	By examination.	Earville.	Mancheater.	
8146	Anderson, Aug.	March 1, 1897	By examination.	Tingley.		
8211	Aborn, F. J.	April 5, 1897	By examination.	Carroll.	Bayard.	
8250	Atkinson, J. H.	May 17, 1897	By examination.	Sheffield.		
8322	Adams, J. W.	October 8, 1897	As graduate.	Mason City.		
8445	Andre, T. J.	May 17, 1898	By examination.	Mason City.		
8446	Allen, S. A.	June 5, 1898	By examination.	Schaller.	Sioux City	Nevada, Mo.
8504	Allison, S. M.	June 21, 1898	By examination.	Sheldon.		
8945	Arthur, H. J.	August 10, 1899	By examination.	Nassau.	Williamsburg.	
8966	Alt, George W.	April 28, 1899	By examination.	Webster City.		
8966	Amstern, George S.	May 29, 1899	By examination.	What Cheer.		
8794	Anderson, O. H.	January 7, 1900	Graduate.	Manchester.	Wesley.	
8902	Allen E. D.	June 27, 1900	Graduate.	Kingsley.	Dayton.	

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
5544	Ankama, S. E.	March 7, 1899	By examination.	Emmetsburg.	Cylinder.	
5548	Adam, W. C.	March 7, 1899	By examination.	Elma.		
5549	Anderson, A. G.	March 7, 1899	Graduate	Bedfield.		
5587	Ashford, George W.	May 17, 1899	Graduate	Stout City.	Homer, Neb.	
5705	Allen, D. A.	June 18, 1899	By examination.	Clear Lake.	Ventura.	
5748	Anderson, Henry C.	September 5, 1899	Graduate	Council Bluffs.	Dwight, Ill.	
5795	Armstrong, Archie W.	December 5, 1899	Graduate	Allison.	Dunlap.	
5898	Austin, Silas E.	December 5, 1899	By examination.	Boone.	Ogden.	
5881	Anderson, Swan	March 6, 1900	Graduate	Des Moines.	Lausing.	
5938	Acherman, Jacob O.	March 6, 1900	By examination.	Fontanelle.		
5952	Adams, Hicks L.	March 6, 1900	By examination.	Dayton.		
6133	Anderson, Wm. J.	September 4, 1900	Graduate	Des Moines.		
6179	Archer, Merritt D.	December 4, 1900	By examination.	Mason City.		
6197	Anderson, Samuel C.	December 4, 1900	Graduate	Des Moines.		
6205	Arner, Victor E.	January 1, 1901	Graduate	St. Ansgar.	Chicago, Ill.	
6205	Agasson, Carl A.	January 1, 1901	By examination.	Oelwein.	Frederika.	
6222	Abbott, Fred C.	February 2, 1901	By examination.	Council Bluffs.		
6256	Anderson, R. E.	April 2, 1901	Graduate	Oylinder.		
6314	Aukema, Mark W.	June 3, 1901	By examination.	Emerson.	Le Mars.	
6423	Abel, W. W.	June 3, 1901	By examination.	Emerson.		
6424	Allen, Bessie M.	September 3, 1901	By examination.	Andubon.		
6431	Agarsen, John G.	September 3, 1901	By examination.	St. Ansgar.	Bonaparte.	
6459	Anderson, Joseph	September 3, 1901	By examination.	Shenandoah.	Clarinda.	
6475	Assmus, Frank B.	October 1, 1901	By examination.	Independence.		
6497	Ackley, Norman G.	November 11, 1901	By examination.	Delaware.		
6521	Armour, Geo. E.	December 3, 1901	By examination.	Cedar Rapids.	Emerson, Neb.	
6522	Anderson, Oscar	January 6, 1902	Graduate	Four Corners.	Oskaloosa.	
6529	Apland, Thos. A.	January 7, 1902	By examination.	Kalo.		
6545	Atzen, Harry E.	February 1, 1902	By examination.	Garden Grove.	Eldon.	
6545	Alley, Arthur, J.	February 1, 1902	By examination.	Grinnell.	Allerton.	
6624	Albertson, Elmer H.	April 1, 1902	By examination.	Inwood.		
6691	Arnette, Floyd H.	June 3, 1902	Graduate	Council Bluffs.		
6713	Anthony, Wm.	August 5, 1902	By examination.	Kota.	Columbus, Ind.	
6704	Adams, H. Clay	August 5, 1902	By examination.	What Cheer.	Sigourney.	
6795	Alexander, R. S.	August 21, 1902	By examination.	Stout City.		
6812	Allen, Hart M.	August 21, 1902	Graduate	Stout City.		
6861	Allen, Ralph J.	September 10, 1902	Graduate	Stout City.	Kansas City, Mo.	

In Michigan.

ABSTRACT—CONTINUED.

Number of certificates.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
1828	Bentley, N. J.	August 8, 1880	By examination	Oakalosa.		
1829	Berry, J. O.	August 13, 1880	By examination	Ottumwa.	Emmetsburg.	
1830	Blackwell, G. P.	November 11, 1880	By examination	Yonks.	Fairbank.	
1831	Blackman, B. P.	December 24, 1880	As owner	Bonaparte.		
1832	Brotherlin, H. L.	December 21, 1880	By examination	Tippecanoe.		
1833	Brown, W. W.	January 7, 1881	By examination	Holland.	Allison	
1834	Berry, William E.	February 26, 1881	By examination	Mustine.		
1835	Berry, William E.	June 30, 1881	By examination	Clatsop.	Iowa City.	
1836	Burroughs, S. E.	July 26, 1881	By examination	Holland.	Allison.	
1837	Burns, E. M.	August 2, 1881	By examination	Holland.	Mason City.	Out of business.
1838	Butler, J. W.	August 2, 1881	By examination	Wesley.		
1839	Brush, George W.	September 10, 1881	By examination	Tracy.	Sioux Center.	
1840	Bibbbs, A. L.	October 16, 1881	By examination	Marshalltown.	Bedford.	
1841	Brown, Artemus.	January 9, 1882	By examination	Lexy.	Leon.	
1842	Bennett, J. W.	January 24, 1882	By examination	Waverly.	Floyd.	
1843	Brittain, S. P.	February 24, 1882	By examination	Rockford.		Out of business.
1844	Besley, James E.	April 24, 1882	By examination	Marengo.	Leders.	
1845	Bachman, E. W.	May 11, 1882	By examination	West Bend.	Estherville.	
1846	Banner, William S.	July 8, 1882	By examination	Des Moines.		Out of business.
1847	Brower, J. H.	August 8, 1882	By examination	Callopo.	Key-stone.	
1848	Bienberg, J. R.	September 14, 1882	By examination	Wheatland.		Washington.
1849	Brynes, J. A.	September 14, 1882	By examination	Marshalltown.		
1850	Elby, A. M.	December 16, 1882	By examination	Harvard.	Galva.	
1851	Bord, John R.	January 30, 1883	By examination	Defiance.		
1852	Branson, W. S.	June 23, 1883	By examination	Irwin.		
1853	Beppler, J. P.	November 23, 1883	By examination	Red Oak.	Sioux City.	
1854	Bullock, Frank H.	September 16, 1884	By examination	Fayette.	Lake City.	
1855	Bennett, T. W.	December 16, 1884	By examination	Lenox.		
1856	Boworth, L. M.	May 24, 1885	By examination	Ames.		
1857	Benge, Alfred T.	September 27, 1885	By examination	Bloomfield.	Humes-ton.	Out of business.
1858	Balldwin, C. H.	November 2, 1885	By examination	Cedar Rapids.	Farmington.	
1859	Baker, W. S.	November 2, 1885	By examination	Pulaski.	Oelwein.	
1860	Burroughs, E. H.	February 24, 1886	By examination	West Union.		Out of business.
1861	Burd, Edwin	March 27, 1886	By examination	Labon.		
1862	Bale, William G.	May 18, 1886	By examination	Iowa City.	Webster City.	
1863	Bass, Leo P.	July 20, 1886	By examination	Mapleton.	Clear Lake.	
1864	Barringer, Will J.	July 27, 1886	By examination	Des Moines.	Council Bluffs.	
1865	Barringer, Will J.	September 18, 1886	By examination	Des Moines.		

3930	Beck, Louis	September	29, 1896	By examination	Des Moines		In Kansas City.
3931	Barbary, R. A.	December	7, 1896	By examination	Albia		
3932	Bassett, George	March	24, 1897	Graduate	Muscatine		
3933	Bassett, George	January	24, 1897	By examination	West Union		Massachusetts.
3934	Biddinger, J. C.	March	16, 1897	By examination	Quasqueton		
3935	Blanchard, George W.	March	21, 1897	By examination	Ossian		Thurman.
3936	Blanchard, George W.	February	25, 1897	By examination	Alison		Waverly.
3937	Bonacker, C. W.	February	25, 1897	By examination	Vinton		
3938	Bonacker, C. W.	February	25, 1897	By examination	Iowa City		
3939	Bonacker, C. W.	March	15, 1897	By examination	Council Bluffs		
3940	Bonacker, C. W.	March	15, 1897	By examination	Maxwell		
3941	Bonacker, C. W.	March	15, 1897	By examination	Grand River		
3942	Bonacker, C. W.	March	15, 1897	By examination	Audubon		Brayton.
3943	Bonacker, C. W.	April	19, 1897	By examination	Dubuque		
3944	Bonacker, C. W.	April	19, 1897	By examination	Rancho		
3945	Bonacker, C. W.	May	17, 1897	By examination	Iowa City		Mt. Vernon.
3946	Bonacker, C. W.	July	7, 1897	Graduate	Cherokee		
3947	Bonacker, C. W.	August	15, 1897	By examination	Battle Creek		
3948	Bonacker, C. W.	August	15, 1897	By examination	Mason City		Greene.
3949	Bonacker, C. W.	September	9, 1897	By examination	De Witt		Out of business.
3950	Bonacker, C. W.	September	9, 1897	By examination	Clinton		Out of business.
3951	Bonacker, C. W.	November	15, 1897	By examination	Chariton		
3952	Bonacker, C. W.	January	4, 1898	By examination	Des Moines		Ossian
3953	Bonacker, C. W.	March	27, 1898	By examination	Postville		In Northrop, Min
3954	Bonacker, C. W.	March	28, 1898	By examination	Sioux City		In Wisconsin.
3955	Bonacker, C. W.	April	17, 1898	By examination	Sioux City		In Des Moines.
3956	Bonacker, C. W.	May	15, 1898	By examination	Colfax		
3957	Bonacker, C. W.	July	8, 1898	By examination	Boyd		Schaller.
3958	Bonacker, C. W.	July	17, 1898	By examination	Oto		
3959	Bonacker, C. W.	August	10, 1898	By examination	Essex		Pleasantville.
3960	Bonacker, C. W.	August	28, 1898	By examination	Winterset		
3961	Bonacker, C. W.	September	4, 1898	By examination	Rockford		
3962	Bonacker, C. W.	September	4, 1898	By examination	Moulton		Ottumwa.
3963	Bonacker, C. W.	October	16, 1898	By examination	Marengo		
3964	Bonacker, C. W.	January	25, 1899	By examination	Shellsburg		
3965	Bonacker, C. W.	January	25, 1899	By examination	Kellogg		
3966	Bonacker, C. W.	February	11, 1899	By examination	Greston		Cherokee.
3967	Bonacker, C. W.	February	12, 1899	By examination	Nashua		
3968	Bonacker, C. W.	March	19, 1899	By examination	Elkader		La Porte City.
3969	Bonacker, C. W.	May	25, 1899	By examination	Allison		
3970	Bonacker, C. W.	June	4, 1899	By examination	Spencer		
3971	Bonacker, C. W.	July	23, 1899	By examination	Maquoketa		
3972	Bonacker, C. W.	August	10, 1899	Graduate	Waverly		Ottumwa.
3973	Bonacker, C. W.	August	11, 1899	By examination	Foster		
3974	Bonacker, C. W.	August	23, 1899	By examination	Grand River		
3975	Bonacker, C. W.	August	23, 1899	By examination	Brandon		
3976	Bonacker, C. W.	March	15, 1897	By examination	Chariton		Lucas.
3977	Bonacker, C. W.	March	15, 1897	By examination	Prairie Grove		Osceola.
3978	Bonacker, C. W.	October	1, 1899	By examination	Onalwa		Parnell.
3979	Bonacker, C. W.	October	23, 1899	By examination	West Side		Out of business.
3980	Bonacker, C. W.	November	14, 1899	By examination			
3981	Bonacker, C. W.	December	14, 1899	By examination			
3982	Bonacker, C. W.	December	16, 1899	By examination			

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
4985	Boyson, G. H.	February 4, 1896	By examination	Cedar Falls	Cedar Rapids.	In Nebraska.
4992	Berkie, John F.	February 4, 1896	By examination	Creston	Wellman.	In S. Dakota.
5002	Bartlett, W. S.	February 8, 1896	By examination	Burlington	Monona.	
5008	Bull, A. S.	March 7, 1896	By examination	Janeville	West Liberty.	
5045	Ballentine, W. A.	April 7, 1896	By examination	Northwood	Royal.	
5057	Butts, Claude M.	May 6, 1896	By examination	Strawberry Point.	Garner	
5079	Barnes, L. M.	May 7, 1896	By examination	Colfax	Dubuque.	
5103	Burt, C. A.	July 7, 1896	By examination	Marshalltown		
5106	Benthall, Eugene.	July 10, 1896	By examination	Olin		
5163	Brockway, S. Alcinda.	September 1, 1896	By examination	Bellevue		
5175	Beck, J. Conrad.	November 1, 1896	By examination	Rockford		
5177	Bartz, Edward R.	December 1, 1896	By examination	De Witt		
5188	Beard, Abner R.	December 14, 1897	By examination	Boone		
5210	Barrist, G. N.	January 2, 1897	By examination	Davenport	Maquoketa	In Washington
5224	Brown, J. H.	March 2, 1897	By examination	Iowa City	Maquoketa	In Kansas.
5248	Breen, Joseph W.	April 6, 1897	By examination	Conrad	Maquoketa	In Missouri.
5245	Blanche, R. J.	April 6, 1897	By examination	Conrad		
5267	Biglow Zella.	April 6, 1897	By examination	Conrad		
5296	Brown, Lewis O.	May 4, 1897	By examination	Lost Nation	Cherokee.	
5294	Babcock, H. M.	June 1, 1897	By examination	Northwood		
5304	Barr, John A.	August 1, 1897	By examination	Ruthven	Laurens.	
5305	Brimhall, C. W.	August 8, 1897	By examination	Dyersville	Farley.	
5306	Brown, Will E.	August 8, 1897	By examination	Schaller	Anamosa.	
5315	Brunk, L. D., Jr.	August 21, 1897	By examination	Webster City	Bonaparte.	
5317	Bundy, O. M.	August 21, 1897	By examination	Waukegan	Packwood.	
5329	Butts, G. W.	September 10, 1897	Graduate	Waukegan		
5329	Bell, Edgar E.	November 6, 1897	By examination	Goodell		
5351	Baker, Howard S.	October 10, 1897	By examination	Leon	Dundee.	
5356	Baum, John W.	November 4, 1897	By examination	Sioux City		
5361	Blodt, John J.	November 9, 1897	By examination	Monticello		
5367	Bayless, Morton M.	December 7, 1897	By examination	Olin		
5363	Bunn, A. I.	December 7, 1897	By examination	Elkader		
5386	Bale, George W.	January 4, 1898	By examination	Waterloo	Holmes.	
5386	Bailey, C. W.	January 4, 1898	By examination	Webster City	Clarion.	
5386	Bukey, Edward E.	February 1, 1898	By examination	Creston	Katherville.	
5388	Beck, C. O.	February 1, 1898	By examination	Webster City		
5404	Beck, C. O.	March 1, 1898	By examination	Marion		

5405	Bigelow, B. E.	March	1, 1896	By examination.	Atlantic.	Whiting.
5406	Buck, Earnest M.	March	1, 1896	By examination.	McGregor.	Fredericksburg.
5407	Bartholow, E. L.	March	1, 1896	By examination.	Des Moines.	Ayrshire.
5408	Batty, Alfred J.	April	6, 1896	By examination.	Marshalltown.	
5409	Buss, Fred J.	March	31, 1896	Graduate	Iowa City.	
5410	Bradshaw, L. S.	May	8, 1896	By examination.	Fairfield.	Clarion.
5411	Barr, Henry J.	June	7, 1896	Graduate	Vinton.	
5412	Becker, Caroline M.	July	27, 1896	Graduate	Elkader.	Cherokee.
5413	Blasner, Walker A.	July	27, 1896	Graduate	Hawarden.	Centerville.
5414	Beer, M. H.	July	27, 1896	Graduate	Cincinnati.	
5415	Bradish, W. C.	August	8, 1896	By examination.	Des Moines.	Missouri Valley.
5416	Bradish, Charles E.	August	8, 1896	Graduate	Leon.	Kellerton.
5417	Bedler, V. L.	August	8, 1896	Graduate	State Center.	Clemona.
5418	Barnes, Ruthford	August	2, 1896	By examination.	Spencer.	Belmond.
5419	Bender, Ed. R.	October	2, 1896	Graduate	Davenport.	Millford.
5420	Bread, Robert V.	September	2, 1896	Graduate	Keokuk.	Kellerton.
5421	Bedler, Eugenia L.	September	7, 1896	Graduate	Le Claire.	Waterloo.
5422	Bowen, Charles A.	January	8, 1899	By examination.	Audubon.	
5423	Bitner, C. W.	February	8, 1899	Graduate	West Union.	Oelwein.
5424	Brorsen, Niels C.	February	7, 1899	By examination.	Columbus Junction.	
5425	Brown, Thomas W.	April	7, 1899	Graduate	Des Moines.	Illinois.
5426	Bell, Charles S.	March	7, 1899	Graduate	Iowa City.	North Dakota.
5427	Brines, Paul C.	March	7, 1899	By examination.	Merrill.	
5428	Benham, L. A.	March	7, 1899	By examination.	McGregor.	Sioux City.
5429	Burton, John R.	March	7, 1899	By examination.	Rockford.	
5430	Breidenbach, J. A.	July	4, 1897	Graduate	Hampton.	Chicago.
5431	Bronson, George S.	July	18, 1899	Graduate	Menlo.	
5432	Bruckner, Herman	July	18, 1899	Graduate	Linnville.	
5433	Billingsley, B. F.	July	18, 1899	Graduate	Van Horn.	
5434	Bruner, W. A.	August	1, 1899	By examination.	Dows.	
5435	Basart, C. E.	August	1, 1899	Graduate	Algona.	
5436	Brinton, Gilbert E.	August	1, 1899	Graduate	Melbourne.	
5437	Bauman, Lena	September	28, 1899	By examination.	Des Moines.	Creston.
5438	Bunt, John M.	September	28, 1899	Graduate	Marion.	Marina.
5439	Blahop, Edmond F.	October	6, 1899	By examination.	Des Moines.	Kansas.
5440	Burke, F. J.	November	6, 1899	Graduate	Rock Rapids.	
5441	Bevelhimer, Bernard	December	6, 1899	By examination.	St. Benedict.	Center Point.
5442	Baugh, Luther A.	February	6, 1900	Graduate	Armstrong.	Gowrie.
5443	Brugman, Conrad	February	6, 1900	Graduate	Oskaloosa.	Wayland.
5444	Bohm, Theo.	March	6, 1900	Graduate	Spencer.	
5445	Brazelton, W. E.	March	6, 1900	By examination.	Sac City.	Rock Rapids.
5446	Bowman, Chas. O.	March	6, 1900	Graduate	Davenport.	Rock Island, Ill.
5447	Blakeslee, Wm. F.	March	6, 1900	By examination.	Marshalltown.	Ames.
5448	Barnett, W. F.	March	6, 1900	Graduate		
5449	Broadgate, Frank L.	March	6, 1900	By examination.		
5450	Berner, Carl A.	April	8, 1900	By examination.		
5451	Barkl, Adolph	April	8, 1900	By examination.		
5452	Bieber, Bernard H.	April	8, 1900	By examination.		
5453	Bauer, Arthur	April	8, 1900	By examination.		

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
5994	Brown, F. Victor.	May 1, 1900	Graduate	Des Moines	Sioux City.	
6000	Baker, Melvin I.	May 1, 1900	Graduate	Marshalltown	Eldora.	
6005	Bensch, Emil.	May 1, 1900	Graduate	Vining	Toledo.	
6012	Bender, Arthur C.	May 1, 1900	Graduate	Shenandoah	Hastings, O. T.	
6022	Byrnes, V. W.	May 1, 1900	By examination.	Durant		
6025	Baker, DeForest.	May 5, 1900	Graduate	Sioux City.		
6031	Beswelmehner, Andrew G.	June 5, 1900	Graduate	Algona	Gladbrook.	
6035	Bisher, W. L.	June 5, 1900	Graduate	Shannon City	Des Moines.	
6047	Bislicky, E. F.	June 5, 1900	By examination.	Mt. Vernon.		
6059	Bennett, Joseph.	June 5, 1900	By examination.	Nevada.		
6060	Bail, C. F.	June 5, 1900	By examination.	Des Moines.		
6068	Button, Emma G.	August 2, 1900	Graduate	Waterloo	Toledo.	
6092	Bondnot, J. E.	August 7, 1900	Graduate	Dundee	Danville, Ill.	
6116	Briggs, E. B.	September 4, 1900	By examination.	Everly.	Manchester.	
6128	Bounguan, Emil.	September 4, 1900	By examination.	Spencer.		
6134	Bullings, Chas. S.	September 4, 1900	By examination.	Brandon.		
6136	Bain, Wilson W.	September 4, 1900	Graduate	St. Ansgar		
6147	Brady, C. F.	October 2, 1900	By examination.	Seymour.	Waterloo.	
6154	Bonner, S. W.	October 2, 1900	By examination.	Des Moines.		In Arkansas.
6163	Butler, C. G.	November 8, 1900	Graduate	Edgewood.		
6167	Blanchard, Chas. B.	November 8, 1900	Graduate	Victor	Scranton.	
6175	Burroughs, Chas. S.	November 8, 1900	Graduate	Sioux City		In California.
6182	Bonchard, Louis E.	December 4, 1900	By examination.	Sanborn.		
6221	Barker, W. H.	February 5, 1901	By examination.	Le Claire.		
6227	Bissick, W. H., Jr.	February 5, 1901	Graduate	Irwin.		
6237	Bransom, Earle S.	March 5, 1901	Graduate	Winthrop		
6242	Brufum, Francis M.	March 5, 1901	Graduate	Essex.		
6274	Broodsen, Luther L.	April 2, 1901	By examination.	Des Moines.		
6293	Brann, Dennis A.	May 7, 1901	By examination.	Hawkeye.		
6303	Brooks, A. H.	May 7, 1901	By examination.	Orange City	Woodward.	
6310	Brolsma, J. G.	May 7, 1901	By examination.	Des Moines	Murray.	
6315	Bonwell, Oda M.	June 4, 1901	Graduate	Lehigh	Pioneer.	
6317	Benda, F. Clyde	June 4, 1901	Graduate	Eddyville.		
6380	Burns, Jas. F.	June 4, 1901	Graduate	Perry.		In Colorado.
6383	Blezek, C. H.	August 6, 1901	Graduate	Des Moines.		
6393	Beecher, F. W. W.	August 6, 1901	Graduate	Des Moines.	Olinda.	In Illinois.
6423	Brown, Philip W.	October 1, 1901	Graduate			

6438	Billinger, C. T.	October	1901	Graduate	Laurens	Seranton.	In Penn. In South D.
6444	Bateman, W. O.	October	1901	By examination	Seymour.	.....	.....
6468	Bradley, Robt. F.	November	1901	Graduate	Des Moines	.....	.....
6480	Bessingh, Arthur E.	November	1901	Graduate	Des Moines	.....	.....
6477	Barnett, John T.	November	1901	By examination	Independence.	.....	.....
6482	Barnes, W. J.	November	1901	By examination	Atkinson.	.....	.....
6484	Boyd, H. C.	November	1901	By examination	Colfax.	.....	.....
6508	Brody, J. B.	December	1901	By examination	Urbana	Lake City	In Wisconsin.
6504	Bartels, Geo. A.	December	1901	By examination	Elkader	Wallingford.	In Minnesota.
6511	Bennet, M. V.	January	1902	Graduate	Paulina	Granville.	.....
6512	Bachman, Gustav.	January	1902	Graduate	Des Moines	.....	.....
6525	Brundage, F. W.	January	1902	Graduate	Independence.	Vinton.	.....
6558	Butler, Harry H.	March	1902	By examination	Manchester.	.....	.....
6573	Brooks, C. R.	March	1902	By examination	Spencer.	Audubon.	.....
6577	Beggs, C. R.	March	1902	By examination	Redfield.	.....	.....
6579	Bender, Fred L.	March	1902	By examination	Des Moines	Anita.	.....
6586	Bailey, Carl F.	March	1902	By examination	Manchester.	Mitchell.	.....
6587	Brant, Frank C.	March	1902	By examination	Des Moines	.....	In South D.
6596	Berry, J. F.	April	1902	Graduate	Clermont	.....	In Colorado.
6607	Blowers, Herbert B.	April	1902	Graduate	Iowa City	Davenport.	.....
6620	Bruhn, Otto J.	April	1902	Graduate	Iowa City	.....	.....
6625	Barnes, Chas. G.	April	1902	By examination	Des Moines	.....	.....
6641	Bruckner, Theo. G.	April	1902	By examination	Parkersburg.	.....	.....
6642	Bird, S. R.	April	1902	By examination	Whiting	.....	.....
6647	Hair, A. O.	April	1902	Graduate	Keokuk.	.....	.....
6659	Bregenzel, John	May	1902	Graduate	Britt.	Lake Mills.	.....
6660	Brakey, Harry J.	May	1902	Graduate	Vincennes	.....	In Kansas.
6675	Burnett, Fred	May	1902	By examination	Des Moines	Council Bluffs.	.....
6676	Boos, Frank H.	May	1902	By examination	Sanborn	.....	.....
6684	Bronson, Ray L.	May	1902	Graduate	Mason City.	.....	.....
6720	Butts, Wm. L.	June	1902	Graduate	Sioux City.	.....	.....
6723	Benson, Geo. M.	June	1902	By examination	Yale.	.....	.....
6728	Becker, Wm. J.	July	1902	Graduate	Knorrville.	Storm Lake.	.....
6744	Brook, Bessie P.	August	1902	Graduate	Earlville.	Rolfe.	.....
6745	Bush, Earl E.	August	1902	Graduate	Farnell	.....	.....
6746	Belmont, Wm. C.	August	1902	Graduate	Hampton.	.....	.....
6747	Butler, Wm. G.	August	1902	Graduate	Des Moines	Hardy.	.....
6748	Busch, W. H.	August	1902	Graduate	Yale	Rockwell City.	.....
6749	Blue, Frank A.	August	1902	Graduate	St. Benedict.	.....	In Ohio.
6813	Bohn, LeRoy H.	August	1902	Graduate	Des Moines	.....	.....
6821	Binford, O. F.	August	1902	Graduate	Mt. Pleasant.	Fonda.	.....
6826	Burroughs, Jas. R.	October	1902	Graduate	Panora	.....	.....
6827	Boyer, H. H.	October	1902	Graduate	Toledo.	.....	.....
6838	Benesch, Theo.	October	1902	Graduate	Des Moines	.....	In S. Dakota.
6839	Brecht, Ernest A.	October	1902	By examination	Des Moines	.....	In Missouri.
6864	Bowen, C. W.	October	1902	By examination	McCallsburg.	.....	.....
6865	Bakka, L. H.	October	1902	Graduate	Des Moines	.....	In Illinois.
6878	Berryman, Chas. S.	November	1902	Graduate	Des Moines	.....	In Ohio.
6879	Beavo, Babelle S.	November	1902	Graduate	Des Moines	.....	.....

ABSTRACT—CONTINUED.

Number of certificates.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
6800	Bone, F. M.	December	By examination...	Grand River.		
6801	Burson, A. G.	December	By examination...	Fonda.		
6802	Brown, L. H.	December	By examination...	Stamont.		
6803	Beach, B. F.	December	By examination...	Stenadoch.		
6804	Batterton, C. E.	February	By examination...	Clinton.		
6805	Brook, G. D.	February	Graduate...	Iowa Falls.		
6806	Berkley, Chas. H.	February	By examination...	Regan.		
6807	Baker, John.	February	By examination...	Edon.		
6808	Benson, M. D.	February	By examination...	Randall.		
6809	Bass, Robt. W.	February	By examination...	Rose Hill.		
6810	Bowen, H. A. S.	February	By examination...	Wapello.		
6811	Barker, H. M.	April	By examination...	Brigham.		
6812	Besch, Andrew E.	April	Graduate...	Dequaque.		
6813	Cain, John G.	April	As owner...	Polo.		
6814	Coss, John T.	June	As owner...	Washington.		
6815	Church, Joseph.	June	As owner...	Elliot.		
6816	Church, William.	June	As owner...	Andon.		
6817	Cherry, George.	June	As owner...	Andon.		
6818	Cherry, J. W.	June	As owner...	Andon.		
6819	Cole, T. R.	June	As owner...	Andon.		
6820	Clark, George D.	June	As owner...	Andon.		
6821	Cole, John L.	June	As owner...	Andon.		
6822	Crow, William M.	June	As owner...	Andon.		
6823	Camp, Amersong.	June	As owner...	Andon.		
6824	Camp, Marshall.	June	As owner...	Andon.		
6825	Canon, J. H.	June	As owner...	Andon.		
6826	Churchill, Frank.	July	As owner...	Andon.		
6827	Castle, Charles A.	July	As owner...	Andon.		
6828	Childs, H. A.	July	As owner...	Andon.		
6829	Coffin, R. M.	June	As owner...	Andon.		
6830	Cook, William A.	June	As owner...	Andon.		
6831	Cummins, M. L.	July	As owner...	Andon.		
6832	Clark, Eaton K.	July	As owner...	Andon.		
6833	Cole, D. L.	July	As owner...	Andon.		
6834	Clark, Edwin A.	August	As owner...	Andon.		
6835	Carroll, J. M.	September	By examination...	Andon.		
6836	Campbell, William J.	August	By examination...	Andon.		
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ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
3764	Camp, George F.	November	By examination	Council Bluffs.	Center Point.	Out of business.
3764	Cullertson, J. W.	December	By examination	Iowa City	Ackron.	
3768	Cobb, Edward T.	December	By examination	West Union.	Cedar Rapids	
3767	Chandler, C. H.	January	By examination	Rodney	Bloomfield.	
3814	Crunk, Charles H.	January	By examination	Gilman		
3819	Counolly, J. P.	February	By examination	Cresco.		
3833	Campbell, D. C.	March	By examination	Crawfordville.		
3862	Collins, D. C.	March	Graduate	Fairfield.	Oakaloosa	In S. D.
3875	Cole, Charles F.	April	By examination	Dayton	Jewell.	
3879	Chadwick, J. B.	August	By examination	Salix.	Deloit.	
3974	Cochran, W. L.	January	By examination	Burlington.		
3984	Carver, W. F.	February	By examination	Renwick.	Jewell	
3987	Cunningham, C. L.	February	By examination	Winteret	Ft. Dodge.	
4003	Curtis, H. E.	March	By examination	Des Moines	Woden.	
4043	Crew, A. S.	May	By examination	Mano	Rock Island, Ill.	
4073	Crowe, Will	June	By examination	Salem.		
4068	Cottrane, M. B.	August	By examination	Thayer.	Afton.	
4088	Cowan, John D.	August	By examination	Clermont.		
4155	Clements, I. W.	December	By examination	Iowa Falls	Alden.	
4168	Coveny, T. H.	February	By examination	Marengo.		
4176	Carmichael, C. C.	February	By examination	Knoxville	Eldora.	
4186	Carpenter, C. O.	February	By examination	Ashton	Lehrville.	
4200	Collins, E. C.	February	By examination	Gaileburg	Sully.	
4201	Cox, James Ed	March	Graduate	Red Oak	Emerson.	
4201	Coppock, William	March	Graduate	Des Moines.		
4210	Cozad, C. B.	April	By examination	Mason City.		
4210	Cuplin, H. S.	April	By examination	Prairie City.	Kellerton.	
4243	Calhoun, H. G.	June	By examination	West Bend.	Adair.	
4243	Culverson, F. P.	June	By examination	Anita		
4253	Carver, E. J.	June	By examination	Greenfield.		
4271	Corey, C. S.	July	By examination	Collins	Colo.	
4275	Cole, H. B.	July	By examination	Lehigh	Ft Dodge.	
4298	Colgan, F. L.	September	By examination	Renwick.		
4298	Curtis, H. M.	November	By examination	Conrad.	Gilmore City.	
4293	Crawford, Harry B.	November	By examination	Chudson	West Branch.	
4293	Curtis, E. C.	November	By examination	Wilton Junction	Des Moines.	
4331		November	By examination	Des Moines	Washington.	

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
5007	Connelly, F. L.	March	By examination.	Agency	Hedrick.	
5048	Cameron, Mabel	April	By examination.	Keswick.	Lohrville.	
5066	Carmichael, Lola.	April	By examination.	Ashton.	Unionville.	
5066	Carr, O. G.	June	By examination.	Monkton.	Lepore.	In Missouri.
5098	Conger, H. G.	June	By examination.	Manchester.	.....	
5128	Corwin, J. W.	January	By examination.	Milton.	Park City, Mont.	
5128	Copeland, Jay.	December	By examination.	Fairfield.	.....	
5154	Cantwell, J. Y.	September	Graduate.	Davenport.	.....	
5147	Coon, L. B.	October	By examination.	Des Moines.	.....	
5164	Carter, J. H.	November	By examination.	Des Moines.	Fairbury, Neb.	In Arkansas.
5166	Carson, Sude M.	November	By examination.	New Sharon.	.....	
5178	Collins, A. E.	December	By examination.	Traer.	.....	
5212	Cahill, J. L.	March	By examination.	Buffalo Center.	Oelwein.	
5228	Cooper, Zada.	March	By examination.	Quasqueton.	Thompson.	
5287	Crawford, O. A.	July	By examination.	Bristow.	Iowa City.	
5288	Curran, W. D.	July	By examination.	Morning Sun.	Fonda.	
5302	Coons, Oscar A.	August	Graduate.	Carson.	Kansas City, Mo.	
5305	Clark, C. B.	November	By examination.	Gilbert Station.	Ogden.	
5379	Coleman, Carl	January	By examination.	Farragut.	Toledo.	
5380	Cook, Roy L.	January	By examination.	North English.	.....	
5383	Childs, A. A.	February	By examination.	Lenox.	.....	
5393	Cameron, J. Ross.	February	By examination.	Manchester.	Webster City.	
5399	Cajacob, J. R.	February	By examination.	Sibley.	Little Rock.	
5401	Cone, Earnest R.	February	By examination.	Laurens.	Sioux Rapids.	In South Dakota
5425	Christensen, S. A.	March	By examination.	Eldon.	Des Moines.	
5426	Callen, F. W.	August	By examination.	Ottumwa.	.....	
5440	Campbell, Boston.	April	By examination.	Cedar Falls.	.....	
5441	Cragg, George W.	April	By examination.	Cedar Falls.	Minneapolis, Minn.	
5468	Carney, E. H.	May	By examination.	Ocheyedan.	.....	
5468	Chilson, E. M.	May	By examination.	Salix.	.....	
5511	Corr, Edward.	June	Graduate.	.....	.....	
5516	Cutler, C. C.	July	Graduate.	.....	.....	
5535	Criswell, J. W.	August	By examination.	St. Madison.	.....	
5577	Campbell, James B.	August	Graduate.	Villeca.	Cedar Rapids.	
5593	Clutter, B. A.	October	By examination.	Des Moines.	Amra.	
5597	Carver, R. A.	November	By examination.	Newton.	Jewell.	
5597	Christensen, John.	November	Graduate.	Ft. Dodge.	Herman, Neb.	

5661	Carr, John J.	January	8, 1899	By examination.	Melrose	Lovilla.
5660	Cody, John J.	February	7, 1899	Graduate	Muscatine	Chelsea.
5662	Conkson, H. C.	March	7, 1899	Graduate	Brooklyn	
5664	Campbell, Le Roy	March	7, 1899	Graduate	Council Bluffs.	
5670	Cash, W. Frank	April	4, 1899	By examination.	Underwood.	
5672	Coy, Mart C.	April	4, 1899	By examination.	Hazelton.	San Francisco, Cal.
5679	Coury, William L.	April	23, 1899	Graduate	Waterloo	
5689	Carstens, L. P.	May	17, 1899	Graduate	Davenport.	Victor, Colo.
5717	Chamberlain, L. H.	July	6, 1899	Graduate	Des Moines.	
5744	Cain, E. B.	July	18, 1899	By examination.	Riverside.	
5766	Corbett, James H.	August	1, 1899	Graduate	Estherville.	
5791	Claybaugh, W. R.	August	1, 1899	Graduate	Bayard.	Ralston, Ill.
5791	Cronin, D. W.	August	1, 1899	Graduate	Des Moines.	Chicago, Ill.
5819	Carpenter, W. S.	September	1, 1899	By examination.	Charter Oak.	
5823	Canfield, C. W.	September	6, 1899	By examination.	West Point.	Des Moines.
5867	Cartier, Clarence A.	November	2, 1899	Graduate	Geneva.	Chicago, Ill.
5900	Coakley, John F.	November	2, 1899	By examination.	Hamburg.	
5940	Coakley, Roland J.	December	2, 1899	By examination.	Farnell.	Gravity.
5944	Collins, M. J.	December	2, 1899	Graduate	Hunston.	
5953	Clark, J. A.	March	6, 1900	By examination.	Fairbank.	
5963	Childs, George S.	March	6, 1900	By examination.	Missouri Valley.	
5982	Copeland, E. E.	March	6, 1900	By examination.	Council Bluffs.	Coon Rapids.
6011	Carroll, Clara M.	May	6, 1900	By examination.	Fairfield.	Cromwell.
6053	Carnean, George W.	June	1, 1900	Graduate	Iowa City.	Colville, Wash.
6058	Cliff, Jesse	June	6, 1900	Graduate	Leon.	Kellerton.
6067	Carlson, L. D.	July	8, 1900	By examination.	Des Moines.	Fanora.
6083	Chinn, Clarence G.	July	8, 1900	By examination.	Des Moines.	In Minnesota.
6092	Chinn, Charles L.	August	7, 1900	Graduate	Des Moines.	
6125	Cole, T. Clinton	August	7, 1900	Graduate	Holland.	Perry Douglas, Wis.
6126	Coakley, B. M.	September	4, 1900	Graduate	Thurman.	
6172	Coakley, R. F.	September	4, 1900	By examination.	Des Moines.	Denison.
6190	Coakley, J. F.	November	8, 1900	Graduate	Pella.	Garden City.
6200	Carly, John H.	December	4, 1900	By examination.	Clinton.	In Illinois.
6224	Clem, Stephen	December	4, 1900	By examination.	Clinton.	In Oklahoma.
6255	Chambers, H. P.	February	6, 1901	By examination.	Clinton.	Webster City.
6266	Chambers, Charles W.	April	6, 1901	Graduate	Shandoah.	
6284	Coy, Charles H.	May	7, 1901	Graduate	Cedar Rapids.	Norway.
6297	Coy, William N. A.	May	7, 1901	Graduate	Alta.	Ames.
6307	Coleman, A. D.	May	7, 1901	Graduate	Muscatine.	
6318	Coakley, J. B.	June	6, 1901	Graduate	Perrut.	
6351	Connell, John	June	4, 1901	Graduate	Maxwell.	Kelley.
6351	Ossay, D. W.	June	4, 1901	Graduate	Red Oak.	In Minnesota.
6362	Cooper, T. C. S.	June	4, 1901	By examination.	Ogden.	
6382	Crew, James H.	July	2, 1901	Graduate	Lime Springs.	In Montana.
6347	Coffee, Slick J.	July	2, 1901	Graduate	Des Moines.	
6387	Crum, Ray R.	August	2, 1901	Graduate	Des Moines.	Pringhar.

ABSTRACT—CONTINUED.

Number of cer- tificates.	NAME.	DATE OF REGISTRA- TION.	HOW REGISTERED.	PLACE OF REGISTRA- TION.	LATEST REPORTED ADDRESS.	REMARKS.
6371	Cutler, Tyna M	August 6, 1901	Graduate	Nora Springs.		
6372	Clift, Guy E.	August 6, 1901	Graduate	Deering.	Tracy.	
6373	Clift, Guy E.	August 6, 1901	Graduate	Deering.		
6385	Chapman, V.	August 6, 1901	Graduate	Burlington		
6386	Chapman, Edward O	August 6, 1901	Graduate	Ottawa.	Stuart.	In Nebraska.
6401	Cook, C. P.	September 8, 1901	By examination	Manly.	Jefferson.	
6428	Croaky, Lottie E.	September 8, 1901	By examination	Des Moines.		
6461	Covner, Chas. C.	October 1, 1901	Graduate	Cedar Bluffs.	Waterloo.	
6465	Covner, E. G.	October 1, 1901	By examination	Cedar Bluffs.		
6474	Clausen, C. N.	November 11, 1901	Graduate	Cedar Falls.		
6485	Check, Chas. W.	November 8, 1901	By examination	Mason City.	Monteruma.	In Wisconsin.
6498	Cain, Chas. K.	December 8, 1901	Graduate	Colfax.		
6542	Castro, Robt. A.	December 4, 1902	By examination	Des Moines.	Iowa Falls.	
6543	Coyvan, H. L.	February 4, 1902	By examination	Storm Lake.		
6559	Cody, Wm. E.	March 4, 1902	By examination	Clinton.	Winterset.	In Indiana.
6583	Cramer, Ralph	March 4, 1902	By examination	Albia.		
6591	Crain, Mattie	April 1, 1902	Graduate	Farlin.		In Illinois.
6592	Crain, Louis F.	April 1, 1902	Graduate	Farlin.		In Illinois.
6609	Coye, Elmer L.	April 1, 1902	Graduate	Ames.		
6632	Clark, C. A.	April 1, 1902	By examination	New Hampton.	Cedar Falls.	
6632	Cummins, Wm. M.	May 5, 1902	By examination	Rockwell City.		In Illinois.
6677	Crowley, S. R.	May 5, 1902	By examination	Des Moines.		In S. Dakota.
6699	Clites, A. M.	June 3, 1902	Graduate	Des Moines.	Masonville.	
6699	Carlson, Roscoe E.	June 3, 1902	Graduate	Clear Lake.		
6719	Charles, Emmet M.	June 21, 1902	Graduate	Woodbine.		
6750	Cassey, John R.	August 5, 1902	Graduate	Des Moines.	Perris.	In Masonri.
6751	Cady, Clarence W.	August 5, 1902	By examination	Atlantic.		In Illinois.
6796	Cadwalader, J. M.	August 5, 1902	By examination	Ottumwa.		
6797	Cooley, W. H.	August 5, 1902	By examination	Jenup.	Waterloo.	
6798	Clark, S. P.	August 7, 1902	By examination	Ogden.		
6886	Carllig, Blanch M.	October 2, 1902	By examination	Council Bluffs.		
6886	Carvannah, Thos. J.	November 2, 1902	By examination	Des Moines.		
6907	Carle, Edgar E.	December 2, 1902	By examination	Knoxville.		
6916	Cameron, Harry D.	February 3, 1903	Graduate	Sioux City.		
6942	Crumrine, Jas. W.	February 3, 1903	By examination	Sioux City.		
6943	Clark, C. R.	February 3, 1903	By examination	Hampton.		
6944	Corbett, Chas. M.	February 3, 1903	By examination	Bayard.	Coorwith.	
6954	Carr, Elmer E.	March 3, 1903	Graduate	Newhall.		

6086	Crook, Fred B.	March	8, 1908	Graduate	Des Moines.....	Dumont.
6088	Crosby, Emmet H.	April	7, 1908	By examination	Des Moines.....	Alexander.
6089	Collins D. F.	April	7, 1908	By examination	Perry.	Bloomfield.
77	Dunlavy, James.	June	8, 1890	As principal	Stiles.	
205	Dierkes, Charles.	June	21, 1890	As owner	Bellevue.	
220	Diehl, Philip H.	June	15, 1890	As owner	Le Mars.	
340	Dunbar, George B.	June	12, 1890	As owner	Center Point.	
762	Davis, J. Mahlon.	June	17, 1890	As owner	Lewis.	
868	Deutschman, A.	June	5, 1890	As assistant	Muscataine.	
889	Dawkins, Benj. M.	June	17, 1890	As owner	Mineral Ridge.	
892	Dean, C. A.	June	14, 1890	As owner	Monona.	
917	Dunn, John W.	July	1, 1890	As owner	Derby.	
958	Durant, A. H.	July	8, 1890	As owner	Algona.	
959	Durant, H.	July	8, 1890	As owner	Algona.	
1028	Dunfield, George W.	June	26, 1890	As principal	Centerville.	Denver, Col.
1060	Doty, Elmer A.	June	19, 1890	As owner	Oxford.	
1688	Douglas, R. N.	June	7, 1890	As owner	Postville.	
1692	Douglas, T. A.	August	80, 1890	As owner	Council Bluffs.	Red Oak.
2243	De Haven, J. C.	August	2, 1890	By examination	Marshalltown.	
2245	Davis, M. W.	July	28, 1891	By examination	Iowa City.	
2246	DeKalb, Benj. D.	September	80, 1891	By examination	Nassau.	Out of business.
2247	Davis, J. D.	September	28, 1891	By examination	Guthrie Center.	
2262	Dosh, Edward	November	27, 1891	By examination	Newell.	
2324	Doty, C. W.	December	24, 1892	By examination	Lucas.	
2329	De Witt, C. H.	January	10, 1892	By examination	Peterson.	Beaver Crossing, Neb.
2438	De Witt, W. A.	May	19, 1892	By examination	Columbus Junction.	Glenwood.
2554	De Witt, W. A.	December	9, 1893	By examination	Ferguson.	Glenwood.
2555	De Witt, W. A.	January	9, 1893	By examination	Calmar.	East Point, Ga.
2547	Davis, Will A.	March	21, 1895	By examination	Dysart.	West Union.
2547	Davis, Will A.	March	21, 1895	By examination	Davenport.	
2547	Davis, Will A.	March	21, 1895	By examination	Orange City.	
2547	Davis, Will A.	March	21, 1895	By examination	Boone.	
2547	Davis, Will A.	March	21, 1895	By examination	Dunlap.	Perry.
2547	Davis, Will A.	March	21, 1895	By examination	Marshalltown.	Estherville.
2547	Davis, Will A.	March	21, 1895	By examination	Radcliffe.	Spencer.
2547	Davis, Will A.	March	21, 1895	By examination	Maquoketa.	
2547	Davis, Will A.	March	21, 1895	By examination	Pomeroy.	Bellevue.
2547	Davis, Will A.	March	21, 1895	By examination	Humboldt.	Charter Oak.
2547	Davis, Will A.	March	21, 1895	By examination	Urbana.	
2547	Davis, Will A.	March	21, 1895	By examination	Salem.	
2547	Davis, Will A.	March	21, 1895	By examination	St. Anthony.	Sutherland.
2547	Davis, Will A.	March	21, 1895	By examination	Algona.	
2547	Davis, Will A.	March	21, 1895	By examination	Des Moines.	
2547	Davis, Will A.	March	21, 1895	By examination	Fredrick.	In California.
2547	Davis, Will A.	March	21, 1895	By examination	Iowa City.	Waterloo.
2547	Davis, Will A.	March	21, 1895	By examination	Lucas.	
2547	Davis, Will A.	March	21, 1895	By examination	Cedar Rapids.	Brighton.
2547	Davis, Will A.	March	21, 1895	By examination	Adel.	Redfield.

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
365	Davis, G. G.	February 4, 1899	By examination.	Denison	.....	In Illinois.
3642	Dawey, William H.	April 16, 1899	By examination.	Moville	.....	
3643	Dodd, A. B.	April 16, 1899	By examination.	Toledo	Charles City.	
3705	Drinkle, W. B.	August 10, 1899	By examination.	Gilman	.....	
3750	Doyle, C. E.	October 14, 1899	By examination.	Logan	.....	
3786	Dwan, Alfred F.	December 16, 1899	By examination.	Dunlap	Hamburg.	
3791	Duriette, R. G.	December 20, 1899	By examination.	Mapleton	Rockwell City.	
3811	Dean, Frank L.	January 29, 1899	By examination.	Cresco	Des Moines	
3821	Doudna, Charles B.	February 4, 1899	By examination.	Bayard	Colfax.	
3849	Downs, A. W.	March 18, 1899	By examination.	Moulton	Ottumwa.	
3849	Devendorf, W. A.	March 18, 1899	By examination.	Union	Story City.	
3897	Davis, James P.	June 6, 1899	By examination.	Bonaparte	.....	
3897	Dayton, D. D.	June 6, 1899	By examination.	Rock Valley	Lime Springs.	
3899	DeNeut, John P.	November 11, 1899	By examination.	George	Adel.	
3900	Douglas, S. A.	February 11, 1899	By examination.	Des Moines	Greenfield.	
3901	Dodson, William F.	February 18, 1899	By examination.	Shenandoah	.....	
3997	Davis, George S.	February 21, 1899	By examination.	Council Bluffs	.....	
4012	Davis, Horace S.	March 7, 1899	By examination.	Collins	Baxter.	
4183	Diddy, Cad.	March 17, 1899	By examination.	Perry	Newton.	
4397	Doyle, William J.	April 1, 1899	By examination.	Davenport	.....	Denver, Colo.
4224	Dorr, O. H.	May 2, 1899	By examination.	Sioux City	.....	
4295	Diebner, W. F.	May 5, 1899	By examination.	Clinton	Wellsburg.	
4295	Dobson, Mrs. M. H.	July 7, 1899	By examination.	LeGrand	.....	
4276	Dorgan, John J.	July 20, 1899	By examination.	Davenport	Fremont.	
4387	Dale, John R.	January 8, 1898	By examination.	Waterloo	Polk City.	
4387	Davis, Frank R.	February 18, 1898	By examination.	Des Moines	Mystic.	
4404	Duffield, O. J.	March 6, 1898	By examination.	Centerville	.....	
4482	Dixon, George W.	July 1, 1898	By examination.	Colfax	.....	
4486	Danquard, Theo.	August 1, 1898	By examination.	Davenport	.....	
4596	Dittmer, Adolph	October 18, 1898	By examination.	Ft. Dodge	.....	
4592	Drummond, O. M.	December 16, 1898	By examination.	Mt. Pleasant	.....	
4592	De Smith, C. F.	February 27, 1894	By examination.	Charles City	.....	
4597	Dolanter, Charles A.	February 17, 1894	By examination.	Des Moines	.....	
4596	Dick, O. K.	April 1, 1894	By examination.	Des Moines	.....	
4648	De Witt, C. F.	May 1, 1894	By examination.	Wyoming	.....	
4648	Daneau, O. E.	May 1, 1894	By examination.	Mediapolis	.....	
4678	Dixon, John S.	June 6, 1894	By examination.	Mason City	Marshalltown.	

In Colorado.

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
6067	Dewey, Judd E.	June	By examination.	Hartley.	Oakville, Mo.	
6068	Dunham, E. I.	July	By examination.	Dubuque.	Mason City.	
6070	Doff, J. E.	July	As assistant.	Spirit Lake.	Muscatine.	
6076	Deibelmer, F. R.	July	By examination.	Victor.	Osgo.	
6125	Deitrich, J. P.	December	By examination.	Nevada.	.....	
6225	Drybread, J. E.	February	By examination.	Creco.	Missouri Valley.	
6271	Dale, Charles C.	April	By examination.	Missouri Valley.	.....	
6271	Dear, William E.	May	Graduate	Des Moines.	.....	
6294	Dockhorn, Geo. H.	May	Graduate	Des Moines.	.....	
6319	Davis, James B.	June	By examination.	Remsen.	.....	
6333	Duster, Peter J.	July	By examination.	Red Oak.	.....	
6352	DeFrehm, Chas.	July	By examination.	Fonda.	.....	
6354	Daubenberger, E. V.	July	By examination.	Ackley.	.....	
6360	Donavan, Gertrude.	August	Graduate	Des Moines.	.....	
6386	Davis, N. W.	August	Graduate	Boone.	.....	
6434	Duff, Chas. M.	October	By examination.	Garden Grove.	.....	
6435	Diehl, Herman	October	By examination.	Danbury.	.....	
6480	Dessel, Frank W.	November	Graduate	Luverne.	.....	
6486	Dorshelmer, Geo. V.	December	By examination.	West Point.	.....	
6505	DeVilbiss, J. W.	December	By examination.	Panora.	.....	
6506	Deardorff, V. G.	December	By examination.	Clinton.	.....	
6556	Desmond, W. J.	February	By examination.	Lemars.	.....	
6558	Diffendang, John T.	March	By examination.	Des Moines.	.....	
6600	Dierdorf, Maggie.	April	Graduate	Danbury.	.....	
6602	Devine, T. H.	April	By examination.	Madrid.	.....	
6678	DeLander, Z. W.	May	By examination.	Runnells.	.....	
6679	Douglas, M. V.	May	By examination.	West Point.	.....	
6680	Draper, E. E.	May	By examination.	Des Moines.	.....	
6724	DeVilbiss, W. R.	June	Graduate	Des Moines.	.....	
6724	Davidson, Fred L.	June	Graduate	Des Moines.	.....	
6752	Davis, Eugene.	August	Graduate	Sarg. Bluffs.	.....	
6753	Drill, L. G.	August	Graduate	Myrtle.	.....	
6764	Dyckstra, Douwe	August	Graduate	Eagle Grove.	.....	
6851	Bolvin, John O.	October	Graduate	Hospers.	.....	
6857	Dunlap, J. W.	November	Graduate	New Hartford.	.....	
6918	Dunabee, Glen N.	February	Graduate	Keeauqua.	.....	
				Moulton.	.....	
				Mt. Pleasant.	.....	

ABSTRACT—CONTINUED.

Number of certificates.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
4884	Erb, B. F.	June 28, 1894	By examination	Cambridge.	Des Moines.	
4782	Edwards, J. E.	September 10, 1894	By examination	Eagle Grove.		
4780	Elder, Alice Vaughn	December 10, 1894	By examination	Tinley.		
4811	Erickson, N. I.	February 5, 1895	By examination.	Des Moines	Dolliver.	
4887	Eckstein, E. J.	May 14, 1895	By examination.	Chester.		
4884	Eperley, C. O.	December 17, 1895	By examination.	Newell.	Jefferson.	
4884	Eason, E. K.	March 8, 1896	By examination.	Mason.	West Bend.	
5078	Emmert, L. Z.	March 31, 1896	By examination.	Des Moines		In Missouri.
5111	Everett, Orton	July 27, 1896	Graduate.	Tama.	Marshalltown.	
5275	Egler, F. H.	May 27, 1897	Graduate.	Defiance.	Fenton.	
5307	Elliott, A. V.	August 8, 1897	By examination.	Akron.	Hawarden	In South D.
5308	Engelhardt, C. P.	August 8, 1897	By examination.	Keokuk.		
5381	Elliott, Alexander	October 5, 1897	By examination.	Rhodes.		
5426	Evans, Fred D.	March 5, 1898	By examination.	Sargeants Bluff	Marengo.	
5440	Evans, J. E.	April 5, 1898	By examination.	Clearfield.		
5441	Edwards, Fred C.	April 5, 1898	By examination.	Moulton.		
5778	Eiman, Charles C.	August 1, 1899	Graduate.	Glenwood.		In Michigan.
5788	Embree, George B.	August 9, 1899	By examination.	West Liberty.		
5850	Eighmy, Alva.	November 9, 1899	Graduate.	Des Moines		In Wisconsin.
5894	Eug, Ludvig.	January 2, 1900	Graduate.	Des Moines		In North D.
6142	Eighmey, Frank Wilbur.	October 2, 1900	Graduate.	Des Moines	McFarland, Wis.	
6164	Ends, Arno F.	November 8, 1900	Graduate.	Davenport.		
6165	Everitt, Joel R.	November 8, 1900	Graduate.	Des Moines		In Illinois.
6180	Everett, August.	December 4, 1900	Graduate.	Buffalo.		
6249	Emmert, J. Victor.	March 4, 1901	By examination.	Atlantic.		
6349	Egstrom, J. A.	July 2, 1901	By examination.	Burside.	Odebolt.	In Missouri.
6380	Emmert, C. B.	August 2, 1901	Graduate.	Des Moines	Brooklyn.	
6408	Eastman, Cora B.	September 2, 1901	Graduate.	Dubuque		
6417	Ends, H. G.	September 2, 1901	Graduate.	Davenport.		In Texas.
6416	Eugert, William R.	September 2, 1901	Graduate.	Independence.		In Illinois.
6514	Evans, Ira E.	January 6, 1902	Graduate.	Des Moines		In Wisconsin.
6580	Erickson, H. E.	January 4, 1902	By examination.	Harvey.		
6546	Eiericht, J. M.	February 7, 1902	Graduate.	Little Sioux.	Sioux City.	
6763	Eiericht, G. N. C.	August 5, 1902	Graduate.	Le Mars		
6765	Ellis, S. S.	August 5, 1902	Graduate.	Iowa City		In Illinois.
6882	Eddington, R. L.	October 7, 1902	Graduate.	Swes City	Armstrong.	
6883	Eckholm, David G.	October 7, 1902	Graduate.			

1902	By examination.	Des Moines.	Grisswold.
1902	By examination. <td>Wall Lake.</td> <td></td>	Wall Lake.	
1903	Graduate.	Centerville.	
1903	By examination.	Catawba.	
1903	As assistant.	Kokocut.	
1903	As owner.	Medfield.	
1904	As owner.	Mincola.	
1904	As assistant.	Dubuque.	
1904	As owner.	Elgin.	
1904	As owner.	Jefferson.	
1904	As owner.	Albion.	Spirit Lake.
1904	As owner.	Shelby.	
1904	As owner.	Waterloo.	
1904	As owner.	Jefferson.	
1904	As owner.	Waukegan.	Williamsburg.
1904	As owner.	Cedar Rapids.	Mt. Vernon.
1904	As owner.	Steamboat Rock.	
1904	As owner.	Liscomb.	Boone.
1904	As owner.	Arca.	Harlan.
1904	As owner.	Oxford.	
1904	As owner.	Colfax.	
1904	As owner.	Low Falls.	Williams.
1904	As owner.	Livermore.	Clarion.
1904	As owner.	Coon Rapids.	Milford.
1904	As owner.	Arca.	
1904	As owner.	Winthrop.	Winthrop.
1904	As owner.	Marshalltown.	
1904	As owner.	What Cheer.	Myrtle.
1904	As owner.	Parkersburg.	George.
1904	As owner.	Atlantic.	See City.
1904	Graduate.	Sigourney.	
1904	By examination.	Madison.	
1904	By examination.	Galva.	
1904	By examination.	West Union.	
1904	By examination.	Creighton.	
1904	By examination.	Panora.	
1904	By examination.	Jefferson.	Prairie City.
1904	By examination.	Lansing.	Cedar Rapids.
1904	By examination.	Hampton.	
1904	By examination.	Clarkeville.	
1904	By examination.	Glidden.	Scranton.
1904	By examination.	Lenox.	Clearfield.
1904	By examination.	Marquette.	North English.
1904	By examination.	Bentonsport.	Farmington.
1904	By examination.	Thurman.	Louisville, Neb.
1904	By examination.	Columbus City.	Mediapolis.
1904	By examination.	Cumberland.	Masena.
1904	By examination.	Viele.	Streator, Illinois.

1907	October	By examination.	Des Moines.	In North Dakota
1907	December	By examination.	Wall Lake.	
1907	March	Graduate.	Centerville.	
1907	April	By examination.	Catawba.	
1907	June	As assistant.	Kokocut.	
1907	June	As owner.	Medfield.	
1907	June	As owner.	Mincola.	
1907	June	As assistant.	Dubuque.	
1907	June	As owner.	Elgin.	
1907	June	As owner.	Jefferson.	
1907	June	As owner.	Albion.	
1907	June	As owner.	Shelby.	
1907	June	As owner.	Waterloo.	
1907	July	As owner.	Jefferson.	
1907	July	As owner.	Waukegan.	
1907	August	By examination.	Cedar Rapids.	Williamsburg.
1907	August	By examination.	Steamboat Rock.	Mt. Vernon.
1907	October	By examination.	Liscomb.	Boone.
1907	October	By examination.	Arca.	Harlan.
1907	November	By examination.	Oxford.	
1907	November	By examination.	Colfax.	
1907	November	By examination.	Low Falls.	Williams.
1907	February	By examination.	Livermore.	Clarion.
1907	March	By examination.	Coon Rapids.	Milford.
1907	September	By examination.	Arca.	
1907	January	By examination.	Winthrop.	Winthrop.
1907	December	By examination.	Marshalltown.	
1907	June	By examination.	What Cheer.	Myrtle.
1907	February	By examination.	Parkersburg.	George.
1907	November	By examination.	Atlantic.	See City.
1907	June	By examination.	Sigourney.	
1907	August	By examination.	Madison.	
1907	July	By examination.	Galva.	
1907	July	By examination.	West Union.	
1907	February	By examination.	Creighton.	
1907	February	By examination.	Panora.	
1907	March	By examination.	Jefferson.	Prairie City.
1907	April	By examination.	Lansing.	Cedar Rapids.
1907	April	By examination.	Hampton.	
1907	May	By examination.	Clarkeville.	
1907	September	By examination.	Glidden.	Scranton.
1907	December	By examination.	Lenox.	Clearfield.
1907	January	By examination.	Marquette.	North English.
1907	April	By examination.	Bentonsport.	Farmington.
1907	April	By examination.	Thurman.	Louisville, Neb.
1907	November	By examination.	Columbus City.	Mediapolis.
1907	February	By examination.	Cumberland.	Masena.
1907	April	By examination.	Viele.	Streator, Illinois.

In North Dakota.

Prairie City.
Oedar Rapids.
Scranton.
Clearfield.
North English.
Farmington.
Louisville, Neb.
Medapolis.
Massena.
Streator, Illinois.

ABSTRACT—CONTINUED.

NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
3939 Fulton, Levi R.	September 19, 1930	By examination	Clarkville	West Superior, Wis.	
4035 Titton, James T.	April 20, 1931	By examination	Nevada	Paulina	
4045 Forsyth, James C.	May 5, 1931	By examination	What Cheer	Redfield	
4063 Farver, Randolph	May 8, 1931	By examination	Wilton Junction	Thompson	
4107 Fletcher, C. T.	August 12, 1932	Graduate	Decorah	Barter	
4238 Fowler, L. E.	July 12, 1932	By examination	Collins	Monona	
4314 Fox, Harry C.	August 2, 1932	By examination	McGregor		
4325 Furate, J. D.	August 4, 1932	By examination	Riverfield		
4325 Fessler, E. S.	October 1, 1932	By examination	Bloomfield		
4352 Forrester, J. S.	December 1, 1932	By examination	Newton	Jolley	Out of business.
4453 Forsyth, David B.	December 27, 1932	By examination	Myrtle		
4462 Fry, William Nelson	May 23, 1933	By examination	Dubuque		
4508 Falkenhauer, A.	May 29, 1933	By examination	Dubuque	Titonka	
4508 Florine, Frank W.	August 9, 1933	By examination	Clinton	Joice	In Wisconsin.
4545 Flaherty, John F.	September 5, 1933	By examination	Ft. Dodge	Chillicothe, Mo.	
4580 Faus, Chas. A.	November 14, 1933	By examination	Onawa	Pocahontas	
4715 Freeman, F. E.	February 4, 1934	By examination	Gilmore City		
4727 Foster, W. O.	September 4, 1934	By examination	Newton	Milo	
4727 Fellows, E. H.	January 23, 1935	By examination	Des Moines	Atlantic	
4988 Franks, W. B.	February 23, 1935	Graduate	Des Moines	Kansas City, Mo.	
5034 Foster, H. E.	March 7, 1935	By examination	Toledo	Oedar Rapids	
5037 Fellows, W. B.	April 14, 1935	By examination	Hamburg	Percival	
5054 Foster, O. G.	April 21, 1935	By examination	Sauk Rapids	Reinbeck	
5058 Farran, J. S.	June 1, 1935	By examination	Anta	Reagan	
5060 Frahm, F. W.	September 1, 1935	By examination	Belmond	Osgo	
5143 Finn, G. W.	January 6, 1937	By examination	Des Moines	Gale	
5183 Ferney, J. L.	January 5, 1937	By examination	Mason	Atlantic	
5208 Fleming, P. W.	February 2, 1937	By examination	Oakland	Rock Rapids	
5215 Fried, A. F.	March 2, 1937	By examination	Newell	Frederickburg	
5216 Foley, C. L.	March 9, 1937	As assistant	Sumner		
5293 Ferrand, Bert E.	March 9, 1937	By examination	Dubuque		
5339 Fiss, Franklin B.	October 9, 1937	By examination	Tipton	Tama	
5345 Fullerton, L. L.	November 9, 1937	By examination	Creston	Villisca	
5398 Flood, Carl A.	December 7, 1937	By examination	Elma	Sumner	
5393 Ferrand, Louis A.	May 7, 1937	By examination	Ft. Dodge	Vincent	
5393 Fallon, Geo. S.	February 1, 1936	By examination			

Number of certificates.

5397	Froid, Chas J.	February	1, 1898	By examination.	Burlington.	Perry.	In California
5400	Fuller, N. H.	February	1, 1898	By examination.	Scranton.	Cambria.	
5402	Far, Floyd E.	September	6, 1898	By examination.	Humeston.	Far.	
5432	Fishburn, E. C.	March	7, 1899	By examination.	Musca, Inc.	Patton, Ill.	
5433	Fowler, W. E.	March	7, 1899	Graduate	Manchester.	Baxter.	
5434	Fowler, C. M.	February	7, 1899	By examination.	Valeria.		
5456	Fowler, Lloyd.	March	7, 1899	Graduate	Clarksville.	Dubuque.	
5460	Falkenhauer, Chas.	May	17, 1899	Graduate	Guttenburg.	Des Moines.	
5708	Frick, E. L.	June	6, 1899	Graduate	Andubon.		
5723	French, Chas. B.	July	6, 1899	Graduate	Des Moines.		
5735	Fuller, Anna C.	July	6, 1899	By examination.	Maxwell.		
5746	Ford, John.	July	18, 1899	By examination.	What Cheer.		
5750	Flint, Elmer R.	July	18, 1899	By examination.	Osage.		
5790	Flanders, Ruth E.	August	1, 1899	Graduate	Waterloo.		
5800	Fisher, Elbert E.	October	8, 1899	By examination.	Rodney.		
5845	Folz, Ernest K.	November	9, 1899	Graduate	Centerville.	Humeston.	
5864	Faner, John G.	December	5, 1899	Graduate	Hull.	Flint, Mich.	
5886	Fisher, William.	December	5, 1899	Graduate	Des Moines.	Duncombe.	
5890	Forrester, C. A.	December	5, 1899	By examination.	Dexter.	Lytton.	
5905	Franklin, Fred H.	February	6, 1900	Graduate	Des Moines.	Brayton.	
5967	Forysth, D. R.	March	6, 1900	By examination.	Mystic.		
5983	Fuller, Herbert M.	April	8, 1900	By examination.	Shelby.	Kirkman.	
6016	Fulton, P. Mack M.	May	1, 1900	Graduate	Akron.		
6036	Franks, Clarence H.	June	5, 1900	Graduate	Farmington.		
6056	Farnsworth, Ambrose H.	August	7, 1900	Graduate	Des Moines.	Page, Neb.	
6095	Freed, Thos.	August	7, 1900	Graduate	Williamsburg.		
6135	Flora, Earl G.	September	4, 1900	By examination.	Des Moines.	Jesup.	
6139	Flora, Bert H.	October	2, 1900	Graduate	Des Moines.	Humeston.	
6218	Flinn, W. L.	October	2, 1900	By examination.	Kellerton.	Dallas Center.	
6283	Farrall, Anna M.	November	8, 1901	Graduate	Des Moines.	Chicago, Ill.	
6363	Francis, Ira E.	February	8, 1901	Graduate	Marion.	Aurora.	
6373	Farrar, V.	August	6, 1901	Graduate	Winthrop.		
6386	Fairbank, Cora M.	August	6, 1901	Graduate	Des Moines.		
6437	Fisher, E. C.	August	6, 1901	Graduate	Des Moines.		
6473	Ford, Joseph N.	October	1, 1901	Graduate	Des Moines.		
6488	Fiamant, A. M.	October	1, 1901	By examination.	Clinton.	North English.	
6513	Farmant, E. E.	November	8, 1901	Graduate	Logan.		
6590	Fenne, L. N.	December	8, 1902	Graduate	Minneapolis.	Connell Bluffs.	
6615	Fenn, L. N.	January	1, 1902	Graduate	Dallas Center.	Washington.	
6633	Fendlay, C. E.	April	1, 1902	Graduate	Mapleton.		
6643	Ferguson, A.	April	1, 1902	By examination.	Ottumwa.		
6697	Fernholz, Ed. N.	April	1, 1902	Graduate	Grinnell.		
6706	Freberg, A. E.	June	8, 1902	By examination.	Des Moines.		
6710	Firkins, Edgar	June	8, 1902	By examination.	Des Moines.	Monmouth.	
6715	Feeney, John E.	June	20, 1902	Graduate	Fairfax.		
6834	Fry, Herbert J.	October	7, 1902	Graduate	Keokuk.		
6835	Ferris, Hugh C.	October	7, 1902	Graduate	Des Moines.		
6868	Fisher, H. C.	October	7, 1902	By examination.	Des Moines.	Stuart.	
7006	Fettguthner, J. J.	April	24, 1903	Graduate	Delta.		
					Dubuque.		

ABSTRACT—CONTINUED.

Number of certificates.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
7011	Fredrickson, Walter E.	May 5, 1893	Graduate	Ottumwa.		
138	Griffith, J. A.	June 14, 1890	As owner	What Cheer.		
301	Gibbons, A. D.	June 6, 1890	As owner	Bloomfield.		
621	Gravell, Charles B.	June 8, 1890	As owner	Grinnell.	Oskaloosa.	
810	Garrison, B. F.	June 16, 1890	As owner	Oscola.		
887	Geiss, Henry	June 6, 1890	As owner	Muscatine.		
888	Griffin, Francis	June 10, 1890	As owner	Mapleton.		
1285	Guenther, J. H.	June 2, 1890	As assistant	Sabula.		
1286	Giles, Daniel R.	June 10, 1890	As owner	Union.	Harris.	
1303	Glasgow, L. G.	June 12, 1890	As assistant	Washington.		
1380	Gamble, Thomas G.	June 12, 1890	As owner	Wheatland.		
1463	Gandrup, W. D.	June 17, 1890	As owner	Story City.		
1555	Gilchrist, W. T.	July 27, 1890	Graduate	Waukon.		
1574	Given, Oliver E.	July 31, 1890	As owner	Stuart.	Des Moines.	
1762	Gould, C. E.	June 6, 1890	As assistant	Mechanicsville.		
1864	Gouldway, A. M.	September 13, 1890	As owner	Bedford.		
1923	George, J. M.	November 23, 1890	By examination	Iowa Falls.	Duluth, Minnesota	
2214	Gesell, C. L.	September 23, 1891	By examination	Sac City.		
2226	Griffith, J. C.	August 23, 1891	By examination	Greenfield.	Ellsworth.	
2361	Gardner, H. G.	February 23, 1892	By examination	Denison.		
2455	Gardner, J. B.	May 23, 1892	By examination	Denison.	Manilla.	
2469	Green, Fred R.	May 24, 1892	By examination	Oskaloosa.		
2679	Gardner, W. W.	August 21, 1893	By examination	Avoca.		
2685	Graves, George B.	September 21, 1893	By examination	Milton.	Frankfort, Missouri	
2721	Gerber, Louis N.	March 4, 1894	By examination	Williams.	Webster City.	
3049	Graham, C. C.	March 13, 1895	By examination	Baxter.		
3167	Gunther, John M.	October 24, 1895	By examination	Trippoli.		
3168	Gore, Irwin	November 24, 1895	By examination	Pilot Mound.		
3171	Gross, Joseph S.	January 4, 1897	By examination	Farlan.		
3171	Graft, W. H.	February 23, 1897	By examination	Carson.	Atlantic.	
3197	Gardner, A. J.	April 6, 1897	By examination	Oregon.	Iowa City.	
3202	Grinwood, E. A.	April 10, 1897	By examination	Independence.		
3223	Goodall, Fart	May 23, 1897	By examination	Osgo.	Oxford Junction.	
3223	Georges, A. G.	April 23, 1897	Graduate	Marion.		
3303	Georges, A. W.	September 4, 1897	By examination	New Hampton.		
3311	Gardner, H. P.	September 7, 1897	Graduate	Stout City.		
3410	Gallup, A. F.	May 15, 1898	By examination	Orange City.		
3443	Geneslaph, A. F.	May 15, 1898	By examination	Orange City.		

In Illinois.
Out of business.

3470	Griswold, E. B.	June	5, 1898	By examination.	Stuart.	Winterset.
3479	Grimm, William H.	June	19, 1898	By examination.	Waukon.	Trar.
3505	Griffin, Charles J.	August	21, 1898	By examination.	Cedar Falls.	Montezuma.
3521	Gardner, George N.	March	19, 1899	By examination.	Webster City.	Webster City.
3584	Glasgow, James D.	May	21, 1899	By examination.	Washington.	
3605	Graham, Ed L.	July	24, 1899	Graduate.	Muscatine.	
3711	Goodwin, F. L. B.	August	20, 1899	By examination.	Malvern.	Hastings.
3780	Graham, Robert D.	October	29, 1899	By examination.	Strawberry Point.	West Branch.
3822	Gill, Bert A.	February	8, 1900	By examination.	Springdale.	
3823	Gill, Charles S.	February	8, 1900	By examination.	Iowa City.	Ewing, Nebraska.
3900	Green, Samuel W.	June	19, 1900	By examination.	Jacksonville.	Ottumwa.
3911	Graham, H. A.	July	18, 1900	By examination.	Kidon.	
3925	Gurney, C. L.	September	21, 1900	By examination.	Carson.	Des Moines.
3954	Graf, J. E.	October	8, 1901	By examination.	Lohrville.	Noblesville, Indiana.
4001	Glen, A.	March	8, 1901	By examination.	Des Moines.	Perry.
4021	Gardner, George H.	March	17, 1901	Graduate.	Trar.	Waukon.
4072	Grimm, A. L.	June	2, 1901	By examination.	Bode.	
4115	Gangstad, S. M.	September	1, 1901	By examination.	Bloomfield.	Des Moines.
4122	Gibson, R. M.	October	6, 1901	By examination.	Hull.	Clinton.
4160	Galbraith, Samuel	January	5, 1902	By examination.	Shenandoah.	Coln.
4178	Graham, Will A.	February	2, 1901	By examination.	Des Moines.	
4189	Gauss, Michael.	April	24, 1902	By examination.	Iowa City.	Tipton.
4203	Graham, Will A.	April	22, 1902	By examination.	Adair.	Chapin.
4274	Gressler, F. J.	March	18, 1902	By examination.	Beacon.	Luca.
4285	Graves, Fred A.	July	4, 1902	Graduate.	Pleasantville.	Bussey.
4302	Gose, K. E.	August	6, 1902	By examination.	Whitemore.	
4316	Gronman, F. C.	September	7, 1902	By examination.	Ames.	
4376	Graves, Edwin H.	October	7, 1902	By examination.	Mechanicsville.	
4391	Gibbent, H. E.	February	4, 1903	By examination.	Osage.	Cedar Falls.
4401	Gregory, Frank E.	March	15, 1903	Graduate.	Sioux City.	Le Mars.
4448	Gerboth, Edward J.	March	2, 1903	By examination.	Sheldon.	
4449	Gallagher, Joe.	May	5, 1903	By examination.	Fort Dodge.	
4477	Griffin, H. M.	May	20, 1903	By examination.	Dubuque.	
4478	Grimm, G. Adolph.	June	20, 1903	By examination.	Tripp.	
4485	Guthrie, Fred L.	June	5, 1903	By examination.	Mapleton.	
4518	Griffin, Charles F.	July	8, 1903	By examination.	Wota.	
4520	Gordiner, Isle.	March	24, 1903	By examination.	Troy.	
4621	Garrett, J. M.	March	8, 1904	By examination.	Cherokee.	
4649	Gregg, Fred W.	April	1, 1904	By examination.	Fairbank.	Springville.
4678	Gill, Vincent F.	May	6, 1904	By examination.	Hawarden.	Evansville, Ills.
4704	Graves, Alva V.	June	7, 1904	By examination.	Geneva.	Rockwell.
4709	Gregory, F. W.	August	6, 1904	By examination.	Letta.	Iowa Falls.
4745	Gipple, L. U.	October	2, 1904	By examination.	Bloomfield.	
4761	Guernsey, J. J.	October	2, 1904	By examination.	Marshalltown.	
4777	Garey, O. E.	May	13, 1904	By examination.	Madrid.	
4799	Graves, F. H.	November	15, 1904	By examination.	Anamosa.	
4833	Green, Schuyler E.	January	8, 1905	By examination.	Manchester.	
4883	Gibbins, A. S.	March	2, 1905	By examination.	Laverne.	
4898	Goodwin, Clarence G.	April	7, 1905	By examination.	Early.	
4875	Graham, J. W.	May	9, 1905	By examination.		
4920		August				

In Michigan.

ABSTRACT—CONTINUED.

NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
Greggerson, James	September 17, 1896	By examination	Harlan.....	Kirkman.....	
Girard, S. A.	October 6, 1896	By examination	Gladbrook.....		
Glynn, T. H.	January 7, 1896	By examination	Cascade.....		
Gorman, N. E.	February 4, 1896	By examination	Larchwood.....	Oofax, Wash. Greenfield.	
Grady, M. J.	March 7, 1896	By examination	Hawarden.....	Manchester.	
Gray, George L.	April 7, 1896	By examination	Bedford.....	Dike.	
Grena, B. W.	April 17, 1896	By examination	Fredricksburg.....	Melvin.	
Glasgow, J. M.	April 17, 1896	By examination	Waterloo.....		
Glassow, F. W.	April 17, 1896	By examination	Ocheyedan.....		
Goodenow, N. H.	May 6, 1896	By examination	Victor.....	Scranton.	
Gwynn, E. H.	September 2, 1897	By examination	Manning.....	Chicago, Ill.	
Guther, J. S.	February 2, 1897	By examination	Kensett.....	Dougherty.	
Griffin, H. E.	February 6, 1897	By examination	Clare.....		
Griffin, D. J.	April 1, 1897	By examination	Bladsburg.....		
Grenier, L. F.	June 1, 1897	Graduate	Murray.....		
Griggs, M. F.	June 2, 1897	Graduate	Cherokee.....		
Gerlach, Richard	August 2, 1897	By examination	Store City.....	Des Moines.	
Gandup, A. W.	August 8, 1897	By examination	Grinnell.....	Gilman.	
Gould, I. L.	August 8, 1897	By examination	Knoxville.....	Otley.	
Gambie, O. A.	December 4, 1898	By examination	Centerville.....	Ft Dodge.	
Guinn, George W.	January 1, 1898	By examination	Fairbank.....	Nemaha.	
Green, O. J.	March 1, 1898	By examination	Webster City.....	Weegee.	
Graffunder, C. L.	March 1, 1898	By examination	Sumner City.....	Charles City.	
Gowan, C. B.	March 1, 1898	By examination	Mason City.....	Goldfield.	
Gowen, C. M.	March 1, 1898	By examination	Iowa Falls.....		
Gaylor, C. W.	April 6, 1898	By examination	Moulton.....		
Gregory, C. W.	April 6, 1898	By examination	Hopkinton.....		
Gale, W. S.	April 31, 1898	Graduate	Ledyard.....		
Gearhart, N. A.	May 8, 1898	By examination	Fort Madison.....	Alaska.	
Graves, O. L.	May 8, 1898	By examination	Des Moines.....		
Guth, Theodore J.	July 27, 1878	Graduate	Vinton.....	St. Anthony.	
Gott, E. S.	August 8, 1898	Graduate	Burlington.....	Prophetstown, Ill.	
Gillmore, Mary E.	August 8, 1898	Graduate	Story City.....		
Gantz, Frank	August 8, 1898	Graduate	Alta Vista.....		
Gandrup, H. D.	August 8, 1898	By examination	Vinton.....		
Gosman, A. T.	September 6, 1898	By examination			
Gilmore, H. N.	September 6, 1898	By examination			
Gilmore, R. E.	December 6, 1898	By examination			
Gilmore, R. E.	December 6, 1898	By examination			

5315	Giles, Grant	January	1900	Graduate	Stiles	Mingo.
5768	Goodrich, W. W.	August	1900	Graduate	Des Moines	
5768	Glass, A. H.	January	1900	By examination	Buffalo Center	
5790	Green, Arno	August	1900	By examination	Lake Park	Salix.
5846	Groce, Francis W.	November	1900	Graduate	Ogden	Boone
5854	Graw, G. H.	November	1900	By examination	Manning	
5897	Gill, W. H.	January	1900	By examination	Havlock	Terrill
5914	Gale, Winfred I.	February	1900	By examination	Monkton	Unionville.
5947	Gauss, E. F.	March	1900	By examination	Shenandoah	Manila.
5990	Griffith, J. E.	March	1900	By examination	Andon	
5991	Grubbs, A. B.	April	1900	Graduate	Oto	
6002	Grover, Robert Oswald	May	1900	Graduate	Central City	Mason City.
6075	Groezinger, Fred A.	July	1900	Graduate	Lansing	Pocahontas.
6076	Grenier, Archille B.	July	1900	Graduate	Des Moines	Worthington, Minn.
6104	Gross, August G.	August	1900	Graduate	Hartley	
6117	Gratz, R. O.	August	1900	Graduate	Grand Junction	Parkersburg.
6152	Graf, Owen D.	September	1900	By examination	George	
6155	Garmann, Ory W.	October	1900	By examination	Mason City	Titonka.
6184	Graf, Owen D.	October	1900	Graduate	Des Moines	
6226	Gilman, Geo. W.	December	1900	By examination	Fort Dodge	
6226	Gletty, F. J.	February	1901	By examination	Edgewood	St. Ansgar.
6241	Gitzendanner, Herman	March	1901	By examination	Marne	
6244	Greve, J. H.	March	1901	By examination	New Hampton	Anita.
6245	Gilham, Warren B.	March	1901	By examination	Radcliffe	Albert (Ity.
6251	Givens, Eugene	March	1901	By examination	Des Moines	Colorado.
6276	Groves, James O.	April	1901	Graduate	Decorah	Kansas.
6277	Grensel, Charles N.	May	1901	Graduate	Stout City	Nebraska.
6290	Gates, Roy H.	May	1901	Graduate	Waterloo	
6296	Garnant, Lon	May	1901	By examination	Cedar Rapids	
6306	Grueener, W. J.	May	1901	By examination	Des Moines	
6350	Glendenning, Geo. H.	June	1901	Graduate	Des Moines	Arlington, S. D.
6360	Gardner, C. L.	August	1901	Graduate	Decorah	Centerville.
6412	Gardner, Arthur L.	October	1901	Graduate	Des Moines	Bloomfield.
6515	Gammill Willard	January	1902	Graduate	Leon	Oseola.
6540	Geddes, Mamie O.	February	1902	Graduate	Washta	Washington.
6560	Goodwin, Clayton E.	March	1902	Graduate	Council Bluffs	
6612	Goodall John A.	April	1902	Graduate	Iowa City	Sioux City.
6631	Gaumer, J. E.	May	1902	By examination	Des Moines	Bedford.
6632	Griffith, Geo. O.	May	1902	By examination	What Cheer	
6635	Gill, Harvey J.	June	1902	Graduate	Dubuque	
6700	Gilchrist, T. L.	June	1902	Graduate	Des Moines	
6729	George, A. B.	July	1902	By examination	Lake View	
6735	Glaser, J. J.	July	1902	By examination	Fonda	
6757	Gatling, S. K.	July	1902	Graduate	Des Moines	Rolfe.
6758	Gerard, H. H.	August	1902	Graduate	Beacon	
6789	Grimm, Frank H.	August	1902	By examination	Dubuque	
6814	Gatchell, P. A.	August	1902	Graduate	Des Moines	
6838	Gleason, Mathew P.	October	1902	By examination	Essex	
6868	Gill, Carl E.	December	1902	Graduate	Terrill	
6873	Green, F. H.	March	1903	Graduate	Muscataine	

In Illinois.

In Indiana.

In Texas.

In Wyoming.

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
6875	Gilsdorf, John J.	April 7, 1903	Graduate	Council Bluffs.		In Wisconsin.
7007	Gilbertson, H. Roy	April 22, 1903	Graduate	Decorah.		
12	Husband, C. A.	June 4, 1900	As owner	Waconia.		
57	Himrod, Mrs. D. M.	June 8, 1900	As owner	What Cheer.	Epworth.	
61	Hirwood, George	June 7, 1900	As owner	Mesonville.		
60	Hyde, M. J.	June 10, 1900	As owner	Brandon.		
203	Huchman, A. C.	June 12, 1900	As owner	Red Oak.		
308	Hunter, W. A.	June 14, 1900	As principal	Anamosa	Belle Plaine.	
349	Hill, T. W.	June 4, 1900	As owner	Estavria.		
352	Hartle, H. D.	June 8, 1900	As owner	Council Bluffs.		
470	Huston, George W.	June 4, 1900	As owner	Clinton.		
548	Harrison, C. E.	June 4, 1900	As assistant	Davenport.		
596	Hagensick, H. H.	June 17, 1900	As owner	Elkader.		
661	Higley, Daniel G.	June 23, 1900	As owner	Fairfield.		
681	Hovey, H. W.	June 24, 1900	As assistant	Independence.		
774	Hope, George T.	June 4, 1900	As owner	Little Sioux.	Sioux City.	
795	Haman, George C.	June 29, 1900	As owner	Cedar Rapids.		
911	Horne, John.	June 5, 1900	As owner	Mt. Ayr.		
1071	Howenstein, W. M.	June 2, 1900	As owner	Parkersburg.		
1130	Huegle, H. W.	June 10, 1900	As assistant	Des Moines.		
1185	Hansen, E.	June 7, 1900	As owner	Sioux City.		
1196	Hopper, E. M.	June 14, 1900	As owner	Springville.		
1197	Hopper, Mary S.	June 14, 1900	As owner	Springville.		
1280	Hopwood, A. L.	July 9, 1900	As owner	Vinton.	Pasadena, Cal.	
1319	Hanna, John W.	July 24, 1900	As owner	Winfield.		
1478	Houghton, F. E.	July 30, 1900	As assistant	Adel.	Des Moines.	
1518	Hansen, B. C.	July 30, 1900	As assistant	Des Moines.		
1539	Henry, George C.	July 23, 1900	As assistant	Burlington.		
1686	Haskell, George E.	August 4, 1900	By examination	Oswego.	Grand Junction, Col.	
1687	Harlan, Charles E.	August 3, 1900	By examination	Des Moines.		
1689	Hammer, Alfred.	August 10, 1900	By examination	Des Moines.		
1695	Harlan, L. L.	July 31, 1900	By examination	Ottumwa.	Hawarden.	
1723	Harris, T. C.	September 9, 1900	As owner	Bartlett.		
1724	Hesser, Rudolph	September 14, 1900	As owner	Keokuk.		
1781	Herriott, John	September 17, 1900	As owner	Stuart.		
1786	Hubbard, L. W.	October 10, 1900	As owner	Monmouth.		In Colorado.
1788	Hinslaw, John	September 4, 1900	By examination	Winterset.		

ABSTRACT—CONTINUED.

Number of certificates.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
3245	Hinc, J. B.	May 17, 1887	By examination.	Hampton	Fort Dodge.	
3278	Houghton, F. W.	July 6, 1887	By examination.	Muncie Bluffs.		
3313	Haas, Fred	September 6, 1887	By examination.	Marengo.		
3340	Henry, Arthur B.	October 24, 1887	By examination.	Oreston	Des Moines.	
3346	Hassels, F. C.	October 24, 1887	By examination.	Storm Lake	Armstrong.	
3347	Hallett, Arthur	November 15, 1887	By examination.	Bloomfield	Phoenix, Arl.	
3352	Haefer, E. C.	December 17, 1887	By examination.	Siox City.		
3357	Hedges, Thomas M.	December 27, 1887	By examination.	Grinnell.		
3374	Hardy, Rufus E.	February 11, 1888	By examination.	Bloomfield.	De Smet, S. D.	
3384	Hegelman, W. E.	February 20, 1888	By examination.	Elkader	Iowa Falls.	
3420	Huerfel, D.	March 20, 1888	By examination.	Indianola.		
3421	Henderson, E. L.	March 28, 1888	By examination.	West Liberty		
3451	Hornet, E.	April 15, 1888	By examination.	Boone	Des Moines.	
3460	Huff, T. C.	May 8, 1888	By examination.	Missouri Valley	Moundmin.	
3464	Higgins, E. C.	May 27, 1888	By examination.	Auburn	Laurens.	
3468	Hammill, J. C.	August 7, 1888	By examination.	Hurlingon.		
3527	Hipsley, J. J.	September 7, 1888	By examination.	Avoca.		
3515	Hofmann, Charles F.	September 18, 1888	By examination.	Rockwell	Hull.	
3540	Hofmann, G. W.	October 20, 1888	By examination.	Hubbard	Mason City.	
3569	Huwer, J. P.	May 10, 1889	By examination.	Storm Lake	Eldora.	
3574	Horsman, U. O.	June 15, 1889	By examination.	Waterloo.	Des Moines.	
3577	Horsman, J. L.	June 18, 1889	By examination.	Hampton.		
3579	Hoskins, O. B.	July 16, 1889	By examination.	Solon.	(Solon only)	
3582	Hofer, A. E.	July 16, 1889	By examination.	Coggon.		
3706	Hall, L. G.	August 16, 1889	By examination.	Burlington	Maurice.	
3719	Harrison, J. C.	August 20, 1889	By examination.	Fredericksburg	New Albia.	
3713	Hatter, Vincent	August 20, 1889	By examination.	Keota	Williamburg.	
3748	Holmes, W. L.	September 8, 1889	By examination.	Winterset	Des Moines.	
3755	Hervey, Chas. B.	November 6, 1889	By examination.	Clinton	Camanche.	
3756	Hunt, Homer	October 16, 1889	By examination.	Tama	Des Moines.	
3774	Hufford, W. S.	December 8, 1889	By examination.	Ottumwa	Bloomfield.	
3785	Huelach, John A.	December 16, 1889	By examination.	Leota	Columbus Junction.	
3806	Hendrix, N. T.	January 25, 1890	By examination.	Rockwell	Emmetsburg.	
3807	Herley, George F.	January 28, 1890	By examination.	Clinton.		
3845	Hill, Olin E.	March 11, 1890	By examination.	Orford Junction	Chicago, Ill.	
3861	Honak, Miss Lilla	March 18, 1890	By examination.	Missouri Valley	Logan.	
3862	Huff, Frank B.	March 18, 1890	By examination.			

Out of business.

1893	Hagan, James H.	March	By examination.	Des Moines	Des Moines, Cal.	In Chicago.
1894	Hager, R. H.	April	By examination.	Rockwell City	Emmetsburg.	
1895	Hewer, Fred	April	By examination.	Mt. Air	Sioux City.	
1896	Hiltsbeck, E. F.	April	By examination.	Waukegan		
1897	Henderson, C. B.	April	By examination.	Grinnell		
1898	Henderson, C. B.	June	By examination.	Grinnell		
1899	Hedges, Miss F. L.	October	By examination.	Frederick		
1900	Hedger, Frank	January	By examination.	Fort Dodge		
1901	Hare, Will W.	January	By examination.	Minburn		
1902	Hart, J. W.	January	By examination.	Waterloo	Centerville.	
1903	Hedderberg, B. F.	March	By examination.	Marshall	Deon.	
1904	Homan, Richard	March	By examination.	Marshall	Kalona.	
1905	Hunt A. F. J.	March	By examination.	Des Moines		
1906	Honold, A. F.	April	By examination.	New Market	Clarinda.	
1907	Henderson, James M.	April	By examination.	Wagon Wheel		
1908	Henderson, J. H.	April	Graduate	Washington	Milton.	
1909	Hall, Frank	April	Graduate	Davenport		
1910	Hess, Daniel J.	May	Graduate	Wesley		
1911	Hammann, John	May	Graduate	Dubuque		
1912	Hammell, Charles C.	June	Graduate	Burlington	Dike.	
1913	Hoffman, G. W.	June	Graduate	Grand Center		
1914	Hoffman, Miss K. Z.	June	Graduate	Laurens		
1915	Hingston, Nick J.	August	By examination.	Bellevue	Sioux City.	
1916	Hindorf, A. E.	October	By examination.	Dexter	La Motte.	
1917	Henry, W. P.	November	By examination.	Nora Springs	Newton.	
1918	Hart, John L.	November	By examination.	Belmond	Des Moines.	
1919	Hufford, E. A. H.	November	By examination.	Fairfield	Klemme.	
1920	Hibbs, G. B.	December	By examination.	Mitchellville	Cedar Rapids.	
1921	Hogler, G. E.	December	By examination.	Mt. Vernon		Out of business.
1922	Hogler, Isaac W.	January	By examination.	Storm Lake	In Washington.	
1923	Harlan, Oregon	February	By examination.	Clinton		
1924	Henning, William E.	March	By examination.	Des Moines	Ottosen.	
1925	Hackett, C. W.	April	By examination.	Oskaloosa	Goodall.	
1926	Haynes, Charles E.	April	By examination.	Williamsburg	Colorado.	
1927	Henderson, H. J.	May	By examination.	Laurens	Swaledale.	
1928	Hughes, Ralph E.	May	By examination.	Victor	Ogallala, Neb.	
1929	Hughes, Thomas	June	By examination.	Muscatine	Thayer, Neb.	
1930	Halstead, S. Alice	July	Graduate	Manilla		
1931	Hissbeck, T. M.	July	By examination.	Muscatine		
1932	Hazlett, John C.	July	By examination.	Clare		
1933	Hood, E. J.	July	Graduate	Greeley	Strawberry Point.	
1934	Henry, John W.	August	By examination.	Atlantic	Extra.	
1935	Hamlar, W. A.	August	By examination.	Rockwell	Terril.	
1936	Holihan, J. W.	August	By examination.	Anita	Guthrie Center.	
1937	Harrison, J. W.	August	By examination.	Mt. Pleasant	Fairfield.	
1938	Holland, John E.	September	By examination.	Humeston	Des Moines.	
1939	Holland, F. T. W.	October	By examination.	Truro		
1940	Harrison, Fred	November	By examination.	Marshalltown	Cedar Rapids.	
1941	Hogland, F. T.	January	By examination.			
1942	Hutchinson, J. A.	January	By examination.			
1943	Holmes, George B.	January	By examination.			

ABSTRACT - CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
4380	Henderson, C. R.	February	By examination.	West Liberty.	Roland.	
4383	Hermanson, T. P.	March	By examination.	Tipton.	Hanlontown.	
4412	Hoon, Grant.	March	By examination.	Golden.		
4419	Hanson, A. W.	March	Graduate.	Buffalo Center.		
4421	Hufford, G. E.	March	By examination.	Des Moines.		
4424	Hursh, Will T.	April	By examination.	Des Moines.		
4430	Hurlbut, J. R.	June	By examination.	Des Moines.		
4439	Hurford, H. D.	June	By examination.	Montezuma.	Des Moines.	
4480	Harrod, H. D.	July	By examination.	Clarion.		
4484	Hamilton, L. C.	August	By examination.	Dubuque.		
4502	Hedley, John E.	December	By examination.	Hawarden.		
4555	Hammer, C. H.	February	By examination.	Burlington.		
4573	Held, William	February	By examination.	Trar.		
4576	Hieber, Louis O.	February	By examination.	Sioux City.	Cedar Falls.	
4584	Hart, W. E.	March	By examination.	Ruthven.	West Side.	
4614	Hart, W. E.	March	By examination.	Clarion.	Mason City.	
4618	Hills, F. N.	April	By examination.	Anamosa.		
4633	Holt, Edward S.	April	By examination.	Alton.	Cedar Rapids.	
4650	Hildesheim, Jacob J.	May	By examination.	Chancey.	Galva.	
4651	Holmes, Eva R.	May	By examination.	Elliott.	Clinton.	
4657	Holbert, M. M.	June	By examination.	Mytic.	Imogene.	
4684	Hughes, Edward J.	July	By examination.	Waterloo.	Dixon, Mo.	
4694	Harrison, Harry H.	September	By examination.	Hampton.		
4720	Harrington, J. E.	September	By examination.	Keota.	Sioux City.	
4722	Hamilton, Ralph C.	October	By examination.	Cedar Falls.	Hyne.	
4744	Boy, Andrew W.	October	By examination.	Sigourney.		
4752	Bathner, F. F.	December	By examination.	Delwain.		
4757	Hill, F. S.	December	By examination.	Des Moines.		
4790	Hill, F. S.	December	By examination.	Whitelet.		
4807	Harris, Willis C.	May	By examination.	Lake Mills.		
4833	Henry, Wilbur J.	December	By examination.	Bellevue.		
4831	Hedgeson, P. A.	March	By examination.	Boone.		
4846	Hauske, Ed.	March	By examination.	Stockton.		
4849	Hantz, Louis W.	March	By examination.	Alton.	Knorrville.	
4854	Hall, A. P.	March	By examination.	Humboldt.	Hawthorne.	
4854	Hoad, J. G.	May	By examination.	Ackley.	Liversmore.	
4873	Hoad, Leon D.	June	By examination.	Hamburg.	Grundy Center.	
4890	Hedberg, Matthew G.	July	By examination.			
4900	Holtzinger, P. S.	July	By examination.			

South Dakota.

4932	Hempel, F. O.	September	17, 1895	By examination.	Clinton	Laporte, Ind.
4933	Hansen, George.	December	17, 1895	By examination.	Council Bluffs.	Bridgewater.
4934	Hath, Lawrence.	December	17, 1895	By examination.	Massena.	Elliot.
4935	Harrod, I. E.	January	8, 1896	Graduate	Des Moines.	Garrison.
4936	Harbold, Cora O.	January	7, 1896	By examination.	Mapleton	Missouri Valley.
4937	Harden, J. P.	January	7, 1896	By examination.	Dela.	Atlantic.
4938	Harden, L. F.	January	7, 1896	By examination.	Watkins	Omaha, Neb.
4939	Harvey, R. W.	February	4, 1896	By examination.	Logan	St. Ansgar.
4940	Hally, H. D.	February	4, 1896	By examination.	Elliot.	Marion.
4941	Hesse, R. C.	February	4, 1896	By examination.	Logan	St. Ansgar.
4942	Harlan, Will D.	February	4, 1896	By examination.	Macdonia	St. Ansgar.
4943	Halloran, J. E.	February	25, 1896	By examination.	Swan	St. Ansgar.
4944	Horton, F. E.	March	8, 1896	By examination.	Struble	St. Ansgar.
4945	Hibner, Charles, Jr.	April	7, 1896	By examination.	Iowa Falls.	St. Ansgar.
4946	Haag, A. M.	April	16, 1896	Graduate	Bevington	St. Ansgar.
4947	Hageboeck, W. H.	May	5, 1896	By examination.	Lyons	St. Ansgar.
4948	Hirschfeldt, Frank.	May	5, 1896	By examination.	Tipton	St. Ansgar.
4949	Hannum, W. J.	May	2, 1896	By examination.	Early	St. Ansgar.
4950	Hannum, W. J.	June	2, 1896	By examination.	Boone	St. Ansgar.
4951	Hamilton, Wm.	July	7, 1896	By examination.	Eldora	St. Ansgar.
4952	Hunter, E. G.	August	4, 1896	By examination.	Mason City	St. Ansgar.
4953	Hintzen, H. F.	August	1, 1896	By examination.	St. Ansgar.	St. Ansgar.
4954	Harstad, Oliver.	August	1, 1896	By examination.	St. Ansgar.	St. Ansgar.
4955	Horton, C. D.	September	1, 1896	By examination.	St. Ansgar.	St. Ansgar.
4956	Hatchstad, M. L.	September	1, 1896	By examination.	St. Ansgar.	St. Ansgar.
4957	Hammel, J. F.	October	6, 1896	By examination.	Radcliffe	St. Ansgar.
4958	Hedges, Grace L.	October	6, 1896	By examination.	Grundy Center.	St. Ansgar.
4959	Hill, J. G.	October	6, 1896	By examination.	Grinnell	St. Ansgar.
4960	Hansch, Harry H.	November	4, 1896	Graduate	Des Moines.	St. Ansgar.
4961	Harper, J. A., Jr.	January	29, 1897	By examination.	Des Moines.	St. Ansgar.
4962	Harman, C. P.	February	2, 1897	By examination.	Greenfield.	St. Ansgar.
4963	Henry, A. L.	March	2, 1897	By examination.	Clinton	St. Ansgar.
4964	Highley, L. E.	March	2, 1897	By examination.	Strawberry Point.	St. Ansgar.
4965	Harris, H. W.	March	9, 1897	By examination.	Storm Lake	St. Ansgar.
4966	Hastings, W. C.	April	6, 1897	By examination.	Carlson	St. Ansgar.
4967	Huett, O. C.	May	4, 1897	By examination.	Ruthven	St. Ansgar.
4968	Harrison, Burton Z.	May	4, 1897	By examination.	Cedar Rapids.	St. Ansgar.
4969	Hirons, W. P.	August	8, 1897	By examination.	Oakland.	St. Ansgar.
4970	Hood, T. R.	August	8, 1897	By examination.	Early	St. Ansgar.
4971	Hamberton, W. M.	September	7, 1897	By examination.	Clare	St. Ansgar.
4972	Hieber, Benjamin	September	7, 1897	By examination.	Marshalltown.	St. Ansgar.
4973	Hinchman, C. B.	November	9, 1897	By examination.	Cedar Falls.	St. Ansgar.
4974	Hindinger, Edward	February	1, 1898	By examination.	Red Oak	St. Ansgar.
4975	Hemenway, J. R.	February	1, 1898	By examination.	Corning	St. Ansgar.
4976	Hornor, L. C.	March	1, 1898	By examination.	Dows	St. Ansgar.
4977	Holt, N. B.	March	1, 1898	By examination.	Ottumwa	St. Ansgar.
4978	Halloran, E. M.	March	1, 1898	By examination.	Ottumwa	St. Ansgar.
4979	Holahan, J. F.	April	2, 1898	By examination.	Dumont	St. Ansgar.
4980	Hoyt, A. L.	July	27, 1898	Graduate	Decorah	St. Ansgar.
4981	Hall, C. E.	August	2, 1898	By examination.	Kegonsa	St. Ansgar.
4982	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4983	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4984	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4985	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4986	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4987	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4988	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4989	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4990	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4991	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4992	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4993	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4994	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4995	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4996	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4997	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4998	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
4999	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.
5000	Hays, W. S.	September	2, 1898	By examination.	Centerville	St. Ansgar.

ABSTRACT—CONTINUED.

Number of copy to be made.	NAME.	DATE OF REGISTRA- TION.	HOW REGISTERED.	PLACE OF REGISTRA- TION.	LATEST REPORTED ADDRESS.	REMARKS.
5581	Harrison, J. J.	October 4, 1898	Graduate	Weside	.....	In Nebraska.
5584	Henning, A. F.	November 1, 1898	By examination.	Newell.	.....	.....
5601	Hubbert, F. P.	December 6, 1898	By examination.	Malcom.	Grinnell.	In Washington.
5602	Hamley, E. C.	December 8, 1898	By examination.	Macpoka.	.....	.....
5624	Biggins, E. A.	January 7, 1899	Graduate	Des Moines.	.....	.....
5651	Hartsock, L. M.	March 4, 1899	Graduate	Clarion.	.....	.....
5658	Hays, S. C.	April 4, 1899	Graduate	Pringhar.	.....	.....
5681	Richter, H. G.	May 6, 1899	Graduate	Cedar Falls.	.....	.....
5682	Hauptman, D. H.	May 6, 1899	Graduate	Council Bluffs.	.....	In Idaho.
5684	Hauptman, John	May 6, 1899	By examination.	Council Bluffs.	Union.	In Nebraska.
5697	Halden, W. R.	May 2, 1899	By examination.	Des Moines.	.....	.....
5704	Henry, J. I.	May 6, 1899	By examination.	Council Bluffs.	.....	.....
5705	Haswell, E. L.	June 6, 1899	Graduate	Hawarden.	.....	.....
5720	Hamilton, E. T.	July 6, 1899	Graduate	Waverly.	Malcom.	.....
5722	Hoover, J. W.	July 6, 1899	Graduate	Mt. Pleasant.	Westfield, Wt.	.....
5725	Humphries, Maud	July 6, 1899	Graduate	Council Bluffs.	Chicago, Ill.	.....
5726	Harwood, M. F.	July 6, 1899	Graduate	Oelwein.	Kingfisher, Okl.	.....
5740	Hamilton, J. V.	July 6, 1899	By examination.	Carroll.	Arlington.	.....
5760	Horn, Charles C.	August 1, 1899	Graduate	Winterset.	Fonda.	In Oklahoma.
5765	Huddleston, T. F.	August 1, 1899	Graduate	Sloan.	Sioux City.	.....
5801	Hoffman, F. P.	September 5, 1899	Graduate	Ottumwa.	.....	In Pennsylvania.
5805	Hafele, Adam N.	September 8, 1899	Graduate	Sioux City.	.....	.....
5827	Halbert, C. B.	October 3, 1899	By examination.	Elliot.	.....	.....
5831	Hill, Merton, J.	October 9, 1899	Graduate	Chardan.	.....	.....
5848	Huecker, John	November 9, 1899	By examination.	Waukon.	Lansing.	.....
5860	Haire, John, Jr.	November 9, 1899	By examination.	Ft. Dodge.	Ames.	.....
5865	Hoag, Lyman N.	December 5, 1899	Graduate	Blanchard.	.....	.....
5877	Hansen, Chas.	December 5, 1899	Graduate	Bayard.	Audubon.	.....
5879	Hansen, A. Ross	January 2, 1900	By examination.	Atlantic.	.....	.....
5888	Honn, Rowena	January 2, 1900	Graduate	Des Moines.	Metall, Ill.	.....
5908	Hosse, E. M.	February 6, 1900	By examination.	Des Moines.	Marengo.	.....
5912	Halden, J. W.	February 6, 1900	By examination.	Moulton.	Moravia.	.....
5918	Harris, Guy F.	February 6, 1900	By examination.	Storm Lake.	Blakesburg.	.....
5919	Hall, Gray F.	March 6, 1900	Graduate	Des Moines.	Logan.	.....
5982	Hansen, Hans	March 8, 1900	By examination.	Des Moines.	.....	.....
5948	Helmen, M. H.	April 8, 1900	By examination.	Bode.	.....	.....

No.	Name	Date	Place	Examination	Result	In	State
6901	Harker, Stewart W.	April	Cedar Falls.	By examination.	.....	In Illinois.	.....
7013	Hill, David W.	May	Libertyville.	Graduate	.....	.....	.....
7014	Hatier, Orville E.	May	Millersburg.	Graduate	.....	.....	.....
1863	Hatier, Charles E.	August	Elliot.	By examination.	.....	Henderson.	.....
2938	Ingersoll, R. B.	April	Boone.	By examination.	.....	.....	.....
2973	Isbell, G. A.	May	Maquoketa.	By examination.	.....	.....	.....
8550	Ingvaldstad, C. O.	November	Sargeant's Bluffs.	By examination.	.....	.....	.....
8598	Israel, Fritz E.	February	Des Moines.	By examination.	.....	Dawson.	.....
8698	Israel, Miss Mary	February	Des Moines (Brighton only).	By examination.	.....	Valley Junction.	.....
3008	Irwin, William T.	February	Des Moines.	By examination.	.....	.....	.....
4324	Isbell, Arthur.	November	Cresco.	By examination.	.....	.....	.....
4326	Irwin, Arthur.	November	Des Moines.	By examination.	.....	.....	.....
4326	Irwin, Arthur.	November	Des Moines.	By examination.	.....	.....	.....
4530	Ingersoll, J. B.	December	Boone.	By examination.	.....	.....	.....
5598	Irvine, W. D.	November	Waterloo.	Graduate	.....	.....	.....
5698	Iverson, Will P.	November	Waterloo.	Graduate	.....	.....	.....
6043	Iddings, C. W.	May	Des Moines.	By examination.	.....	Sargeant's Bluffs.	.....
6329	Iddings, C. W.	June	Mapleton.	By examination.	.....	Ft. Dodge.	.....
6374	Iddings, Leo H.	June	Mapleton.	By examination.	.....	Parkersburg.	.....
295	Iddings, J. Fred.	March	Mapleton.	By examination.	.....	Logan.	.....
297	Johnson, S. M.	June	Mapleton.	By examination.	.....	.....	.....
355	Johnson, Ella S.	June	Mapleton.	By examination.	.....	.....	.....
497	Johnson, Henry.	June	Mapleton.	By examination.	.....	.....	.....
620	Johnson, Edward L.	June	Mapleton.	By examination.	.....	.....	.....
746	Johnson, Joseph G.	June	Mapleton.	By examination.	.....	.....	.....
1013	Johnson, Isaac.	June	Mapleton.	By examination.	.....	.....	.....
1607	Johnson, George W.	June	Mapleton.	By examination.	.....	.....	.....
1596	Jordan, F. H.	August	Mapleton.	By examination.	.....	.....	.....
1596	Jones, J. R.	August	Mapleton.	By examination.	.....	.....	.....
1597	Jones, J. B.	August	Mapleton.	By examination.	.....	.....	.....
2042	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
2293	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
2293	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
2468	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
2468	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
2722	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
2800	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
8044	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
8077	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
8292	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
8343	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
8368	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
8531	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
8596	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
8644	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
8655	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
8736	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
8739	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
8829	Jones, G. W.	October	Mapleton.	By examination.	.....	.....	.....
2864	Jones, Roland	March	Mapleton.	By examination.	.....	.....	.....

ABSTRACT—CONTINUED.

Number of cer- tificate.	NAME.	DATE OF REGISTRA- TION.	HOW REGISTERED.	PLACE OF REGISTRA- TION.	LATEST REPORTED ADDRESS.	REMARKS.
3831	Johnson, E. L.	September 2, 1890	By examination	Stanhope	Des Moines.	In Colorado.
3832	Joder, A. T.	September 7, 1890	By examination	Waterloo	Hudson.	
4023	Jones, L. H.	March 7, 1891	By examination	Shelby	Utmer.	
4077	Johnson, F. W.	June 24, 1891	By examination	Des Moines	Hilman.	
4108	Johnson, H. B.	August 24, 1891	By examination	Ottumwa		
4113	Jessen, Balzer T.	September 23, 1891	By examination	Irwin	.....	
4163	Jones, Samuel A.	January 8, 1892	By examination	Cumberland	Atlantic.	
4197	Jones, Harry F.	March 7, 1892	By examination	Clarinda	Des Moines.	
4199	Johnson, Anton C.	May 19, 1892	Graduate	Ottumwa	Des Moines.	
4232	Johnson, Henry A.	October 11, 1892	Graduate	Sioux Rapids.	.....	
4232	Jones, W.	October 11, 1892	By examination	Lima	.....	
4237	Jessup, A. E.	December 6, 1892	By examination	Des Moines	.....	
4264	Julius, E. D.	January 24, 1893	By examination	Manson	Volga City.	
4278	Johnson, Dee W.	February 7, 1893	By examination	Clarinda	Sharpsburg.	
4441	Jensen, Hans	May 2, 1893	By examination	Jewell Junction	Davis, S. D.	
4547	Johnson, J. N.	November 23, 1893	By examination	Sigourney	Albia.	
4590	Jones, J. D.	January 15, 1894	By examination	Carbon	Weeping Water, Neb	
4608	Jans, Henry	March 1, 1894	Graduate	Des Moines	Logan.	
4635	Johnson, Franklin	May 20, 1894	By examination	Ackley	Marshalltown.	
4686	Junkerman, Julius	June 20, 1894	By examination	Carbon	Stratford.	
4751	Jackson, M. E.	October 2, 1894	By examination	Callender	Manson.	
4754	Johnson, William F.	October 2, 1894	By examination	Mechanicsville	Cedar Rapids.	
4835	Jones, A. F.	March 5, 1895	By examination	Kossanqua	.....	
4922	Jackson, T. C.	August 2, 1895	By examination	Clarinda	.....	
4963	Jeffery, Frank D.	December 8, 1895	By examination	Cedar Rapids		In Montana.
5118	Johnson, T. W.	August 4, 1896	By examination	Le Mars	.....	
5122	Jones, C. H.	August 4, 1896	By examination	Lenox	.....	
5144	Johnson, E. E.	November 1, 1896	Graduate	Davenport	Lehigh.	
5161	Johannsen, Otto	November 1, 1896	Graduate	Toledo	Delhi.	
5236	Junker, W. E.	October 5, 1897	By examination	Red Oak	Des Moines.	
5454	Jackson, T. C.	April 5, 1898	By examination	Sioux Rapids	Shenandoah.	
5465	Johnson, G. J.	April 5, 1898	By examination	Sioux Rapids	Peterson.	
5540	Jarvis, Charles B.	August 2, 1898	Graduate	Stockton		In Oklahoma.
5592	Jones, Chas. R.	October 1, 1898	By examination	Fort Madison		In N. Dakota.
5617	Johnson, A. L.	January 1, 1899	By examination	Des Moines	.....	
5619	Jenkins, W. J.	January 8, 1899	By examination	Colfax	Madrid.	
5622	Jenson, F. W.	January 8, 1899	By examination	Holstein	Washita.	

5692	Junger, W. F.	May	17, 1899	Graduate.	Reinbeck.	Cantril.	In Missouri.
5708	Jericho, Albert	May	1899	By examination	Mt. Pleasant.	Kenewaha.	
5712	Jensen, J. W.	June	6, 1899	Graduate	Manning		
5715	Jensen, M. L.	June	6, 1899	Graduate	Guthrie Center.	Marshalltown.	
5717	Jeunich, C. B.	September	6, 1899	By examination	Aracdis	Roland.	
5739	Johnston, B. M.	October	3, 1899	By examination	Reherville		
5831	Johnston, David L.	March	3, 1900	Graduate	Northwood.	Rake.	
5854	Johnson, Otto	March	6, 1900	By examination	Wesley	Casey.	
5865	Jacobs, F. R.	March	6, 1900	By examination	Des Moines	Dana.	
5873	Jensen, A. M.	April	3, 1900	By examination	Rolfe	Clinton.	
5879	Jones, Ernest H.	April	3, 1900	By examination	Forest City		
5880	Jackson, J. M.	June	5, 1900	Graduate	Des Moines		
5884	Johnson, Andrew	June	5, 1900	By examination	Des Moines	Valley City, N. D.	
5908	Jones, Ora	August	1, 1900	Graduate	Malvern		
5929	Jones, Harry O.	September	4, 1900	Graduate	Ridge Grove		
6130	Jackwitz, N.	September	4, 1900	By examination	Des Moines	Buffalo Center.	
6140	Johnson, Field F.	October	2, 1900	Graduate	Wartoo.		
6208	Jacques, Daniel M.	January	2, 1901	Graduate	Des Moines		
6210	Johnson, E. O.	January	1, 1901	Graduate	Des Moines		
6217	Johnson, A. H.	January	1, 1901	Graduate	Des Moines		
6219	Johnson, Frank	March	5, 1901	Graduate	Des Moines	Marathon.	
6270	Joy, Nellie E.	March	5, 1901	By examination	Remsen.		
6279	Joy, Nellie F.	March	5, 1901	By examination	New Hampton	Estherville.	
6359	Johnson, J. P.	May	7, 1901	By examination	Des Moines		
6369	Johnson, A. I.	August	6, 1901	Graduate	Ginnell.		
6374	Jericho, Carl A.	August	6, 1901	Graduate	Des Moines		
6400	Johnson, Fred W.	August	6, 1901	Graduate	Fairfield	Story City.	
6429	Jones, James T.	August	6, 1901	By examination	Des Moines		
6452	Jones, R. E.	September	8, 1901	Graduate	Fairfield		
6459	Jandera, B. O.	October	7, 1901	Graduate	Des Moines		
6471	Johnson, Chas. W.	October	7, 1901	By examination	Cedar Rapids.		
6478	Johnson, Chas.	November	7, 1901	Graduate	Iowa City.		
6481	Johnson, Frank D.	November	7, 1901	By examination	Eagle Grove.		
6523	Johnson, Nellis J.	November	7, 1901	Graduate	Des Moines		
6532	Jones, Marion J.	January	6, 1902	Graduate	Decorah		
6578	Jones, K. D.	January	4, 1902	By examination	Lemars		
6584	Jones, James C.	March	4, 1902	By examination	Greenfield	Marous.	
6595	James, Thiras Jr.	March	4, 1902	By examination	Winfield	Creston.	
6611	Jander, Paul H.	April	1, 1902	Graduate	Reinbeck	Oscola.	
6621	Jeppson, Alvin L.	April	1, 1902	Graduate	Des Moines		
6627	Johnson, F. W.	April	1, 1902	By examination	Iowa City		
6654	James, Charlotte F.	May	6, 1902	By examination	Northwood.		
6654	Jones, Otto F.	May	6, 1902	Graduate	Des Moines		
6712	Johnson, W. E.	May	6, 1902	By examination	Cedar Rapids.		
6736	Johnson, Guy D.	July	8, 1902	Graduate	Osgo	Waterloo.	
6764	Jackson, J. M.	August	8, 1902	By examination	Kossauqua.		
6765	Jaffries, Clarence R.	August	8, 1902	Graduate	Carbon.		
6800	Jaffries, Clarence R.	August	8, 1902	By examination	Des Moines		
6869	Jennings, Rescoe W.	October	7, 1902	By examination	Des Moines		
6948	Jones Ben G.	February	8, 1903	By examination	Beaconfield.		

ABSTRACT—CONTINUED.

Number of certificates.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
6076	Jones, Chas. A.	April 7, 1908	Graduate	Dubuque.	.....	In Wisconsin.
6082	Johnston, Wm. H.	April 7, 1908	By examination.	Webb.	.....	In Wisconsin.
6092	Kells, Conrad A.	April 4, 1900	As owner.	Ackley.	.....	
436	Kimmerer, C. T.	June 14, 1900	As owner.	Elbridge Junction.	.....	
514	Kirkwood, J. W.	June 5, 1900	As owner.	Otley.	.....	
683	Kerr, David A.	June 1, 1900	As owner.	Keokuk.	.....	
681	Kiedalsch, J. F.	June 7, 1900	As owner.	Keokuk.	.....	
754	Kettering, S.	June 10, 1900	As owner.	Lisbon.	.....	
843	Kempf, Albert.	June 25, 1900	As assistant.	Monticello.	.....	
903	Kennedy, M. T.	June 25, 1900	As owner.	McGregor.	.....	
1170	Keables, H. F.	July 12, 1900	As owner.	Pella.	.....	
1171	Keables, J. B.	July 12, 1900	As assistant.	Pella.	.....	
1705	Kees, John	August 16, 1900	By examination.	Chariton.	.....	
1798	Kuani, Rudolph	August 12, 1900	By examination.	Denison.	.....	
1900	Krebs, J. T.	August 10, 1900	By examination.	Muscatine.	.....	
1973	Keables, H. S.	September 12, 1901	As principal.	Pella.	.....	
2063	Kaufman, E. J.	January 22, 1901	By examination.	Waverly.	.....	
2155	King, Albert E.	June 15, 1901	By examination.	Redding.	.....	
2167	Kuenzel, H. C.	July 9, 1901	By examination.	Garnaville.	.....	
2250	Koto, P. O.	July 17, 1901	By examination.	Forest City.	.....	
2258	King, Thomas F.	October 17, 1901	By examination.	Lineville.	.....	
2333	Kirk, Charles R.	December 28, 1902	By examination.	Moulton.	.....	
2383	Keys, J. N.	January 31, 1902	By examination.	Nugent's Grove.	.....	
2515	Knapp, James J.	March 18, 1902	By examination.	Dubuque.	.....	
2595	Keeler, Charles E.	August 21, 1903	By examination.	Lake Mills.	.....	
2598	Kuchmann, J. T.	March 27, 1905	By examination.	Carroll.	.....	
2597	Kudist, Frank V.	March 27, 1905	By examination.	Des Moines.	.....	
2867	Kiel, Fred	August 6, 1906	Graduate	Marengo.	.....	
3065	Kiedalsch, J. Jr.	August 12, 1906	By examination.	Keokuk.	.....	
3144	Knos, Lars Peter.	March 1, 1907	By examination.	Elkport.	.....	
3145	Kriets, George	March 1, 1907	By examination.	Etherville.	.....	
3199	Klopp, J. J.	May 10, 1907	By examination.	Cedar Rapids.	.....	
3216	Kirk, A. M.	April 17, 1907	By examination.	Iola Grove.	.....	
3277	Karterman, J. R.	July 11, 1907	By examination.	Hull.	.....	
3823	Kilheffer, J. F.	September 20, 1907	By examination.	Cumberland.	.....	
3890	Kessler, Joseph	February 6, 1908	By examination.	Anita.	.....	
3981	Kiehl, R. S.	February 6, 1908	By examination.	.....	Des Moines.	Out of business.
					Mt. Vernon.	
					Anburn.	

5350	King, E. R.	February	20, 1898	.....	West Liberty	Arion.
5408	Kennedy, J. J.	February	27, 1898	By examination.	Newton.	Palmer.
5441	Kessing, J. A. L.	April	17, 1898	Graduate	Iowa City.	De Witt.
5445	Kent, Charles.	October	24, 1898	Graduate	Cedar Rapids.	
5528	Koehler, P. H.	March	25, 1899	.....	Davenport.	
5607	Kinyon, Leslie W.	August	8, 1899	By examination.	Vall.	Whitten.
5709	Koenean, E. O.	August	20, 1899	By examination.	Hubbard	
5769	Kramer, C. F.	November	5, 1899	By examination.	McGregor.	
5769	Kistennmacher, E. J.	November	19, 1899	By examination.	Davenport.	Carlson.
5816	Kettlewell, C. E.	January	31, 1890	By examination.	Iowa City.	Belmond.
5824	Kendall, T. H.	February	18, 1890	By examination.	Ackley	Stout City.
5855	Klise, J. F.	March	8, 1890	By examination.	Paulina	Scotland, S. D.
5872	Koobs, H. J. G.	April	17, 1891	By examination.	Grand Junction.	Centerville.
5945	Kirby, S. C.	February	6, 1891	By examination.	Waverly.	
6050	Kaufman, A.	May	15, 1891	Graduate	Davenport.	Sumner.
6116	Koch, Francis J.	September	16, 1891	.....	Waterloo.	
6156	Koeberte, Theodore A.	December	8, 1892	By examination.	Laurel	Barnes City.
6196	Keefe, Matt J.	March	21, 1892	By examination.	Waterloo.	Waterloo.
6249	Kramme, H. W.	June	6, 1892	By examination.	Ottumwa.	
6307	Kinyon, C. P.	September	21, 1893	Graduate	Dysart.	
6406	Kulmer, John	March	5, 1893	By examination.	Ottumwa.	
6456	Kaiser, Theodore	September	5, 1893	By examination.	Rock Rapids.	
6556	Kaplan, Jay Gould	December	8, 1894	By examination.	Hampton	Alden.
6604	Kent, C. W.	March	5, 1894	By examination.	Bellevue	Odebolt.
6669	Kranz, George F.	June	6, 1894	By examination.	Gowrie	
6708	Ketterer, George A.	August	14, 1894	By examination.	Davenport.	
6712	Kienze, John E.	August	4, 1894	By examination.	Ida Grove.	
6730	Kiner, F. C.	September	2, 1894	By examination.	Riverton.	
6753	Kidd, Mrs. Emma F.	October	2, 1895	By examination.	Webster City.	
6801	Keltz, Bert F.	January	6, 1895	By examination.	Fort Dodge.	
6816	Kelm, Conrad	February	16, 1895	Graduate	Tama	Chelsea.
6844	Kallen, James Loren	March	2, 1894	By examination.	Sioux City.	
6861	Kloster, Ben J.	April	16, 1894	By examination.	Cresco	Orient.
6870	Kloster, J. K.	April	25, 1895	By examination.	Oelwein	Eddyville.
6903	Kissel, George	July	17, 1895	By examination.	Montour	
6905	Kidd, Fred Z.	June	11, 1896	By examination.	Rock Rapids	Marton. In N. D.
6982	Kindson, L. C.	December	24, 1896	By examination.	Bellevue	McCrevey.
6980	Klein, H. W.	February	7, 1896	By examination.	Bloomfield	
5018	Kennedy, C. S.	March	7, 1896	By examination.	Fredricksburg	In Mexico.
5025	Kucheman, B. F.	April	1, 1896	By examination.	Le Mars	Earlville.
5044	Kinsinger, E. D.	April	10, 1896	By examination.	Callender	Sioux City.
5059	Kendall, Charles	April	1, 1896	By examination.	Des Moines	Burlington.
5117	Klise, W. J.	June	1, 1896	By examination.	Ogden	
5117	Knutson, G. W.	June	1, 1896	By examination.	Middle Amana.	
5168	Kaiser, W. O.	November	1, 1896	By examination.	Whitten	
5179	Kunst, Julius	December	14, 1896	By examination.	Emmetsburg.	
5190	Koch, A. F.	April	6, 1897	By examination.	Fort Madison.	
5237	Koenean, W. E.	July	3, 1897	By examination.		
5290	King, R. C.	August	8, 1897	By examination.		
5312	Kaston, W. C.	August	8, 1897	By examination.		

ABSTRACT - CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
5371	Kelley, M. J.	December 7, 1897	By examination.	Parkersburg.	Parkersburg.	
5374	Kennedy, J. D.	January 1, 1898	By examination.	Lake City.	Lake City.	
5375	Kinscy, Carl.	March 1, 1898	By examination.	Paton.	Keosauqua.	
5427	Killmer, A. J.	March 1, 1898	By examination.	Mason City.	Fredericksburg.	
5431	Kindall, R. W.	March 1, 1898	By examination.	Fort Atkinson.	Dolliver.	
5450	Keables, H. F.	April 5, 1898	By examination.	Zella.	Edgewood.	
5501	Kiebes, J. D.	June 7, 1898	By examination.	Elkport.		
5502	Kieger, J. J.	July 7, 1898	By examination.	Spring Brook.		
5524	Kistner, Ferdinand	July 27, 1898	Graduate.	Wall Lake.		
5541	Kistner, Ferdinand	August 8, 1898	Graduate.	Des Moines.	Sibley, Colo.	
5542	Kistner, E. O. D.	August 8, 1898	By examination.	Radcliff.	Denver, Colo.	
5552	Kistner, L. E.	August 7, 1898	By examination.	Carroll.	McCallsburg.	
5582	Kistner, L. E.	September 6, 1898	By examination.	Blanchard.	Denison.	
5586	Kistner, James B.	December 6, 1898	By examination.	Blanchard.	Atlantic.	
5623	Knutson, A. C.	January 4, 1899	By examination.	Oskaloosa.	Kinross.	
5671	Korr, F. E.	April 4, 1899	Graduate.	Leta.	Adel.	
5711	Kurmel, J. P.	June 6, 1899	Graduate.	Davenport.		
5716	Kutabel, W. C.	June 6, 1899	Graduate.	Winterset.		
5738	Kutabel, W. C.	July 1, 1899	By examination.	Des Moines.	Jackson, Neb.	
5757	Kutower, F. C.	August 1, 1899	Graduate.	Bayard.	Dowa.	
5772	Kutower, F. C.	August 1, 1899	By examination.	Glenwood.		
5774	Kutower, F. C.	August 1, 1899	By examination.	Des Moines.		
5890	Kutower, Nick, Jr.	December 6, 1899	By examination.	Des Moines.	Bondurant.	In Wisconsin.
5949	Kutower, Nick, Jr.	February 6, 1899	By examination.	New Hampton.	Osgo.	
6001	Kane, W. P. Alfred.	March 6, 1900	Graduate.	Lyons.	Sanborn.	
6004	Kane, W. P. Alfred.	May 1, 1900	Graduate.	Lyons.		
6007	Kane, W. P. Alfred.	May 1, 1900	Graduate.	Lyons.		
6089	Kellermann, G. H.	June 5, 1900	Graduate.	Keokuk.		In Illinois.
6081	Kellermann, G. H.	August 5, 1900	Graduate.	Keokuk.		
6091	Kellermann, G. H.	August 5, 1900	Graduate.	Van Horn.	Oedar Rapids.	In Nebraska.
6100	Kellermann, G. H.	August 5, 1900	Graduate.	Bedford.		In Wisconsin.
6148	King, L. R.	October 2, 1900	Graduate.	Cedar Rapids.		
6150	Kisner, Ed. C.	October 2, 1900	Graduate.	Sioux City.	Waukon.	
6227	Kisner, Ed. C.	October 2, 1900	By examination.	Ackley.	Kingsley.	
6238	Kiger, H. P.	February 5, 1901	Graduate.	Des Moines.		In California.
6254	Kunzmann, Chas.	March 5, 1901	Graduate.	Des Moines.		In Nebraska.
6258	Kulpa, J. B.	April 5, 1901	Graduate.	Parkersburg.	Perry.	
6259	Koenig, Geo. W.	May 5, 1901	Graduate.	Le Mars.	Rock Valley.	

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
2391	Little, M. A.	April 4, 1892	By examination.	Casey.	Webster City.	
2475	Lessee, A. B.	June 9, 1892	By examination.	Lake City.		
2530	Laney, W. J.	September 6, 1892	By examination.	Decatur.	Davis City.	
2582	Loose, D. N.	September 14, 1892	By examination.	Maquoketa.		
2585	Leach, Louis J.	December 19, 1892	By examination.	West Branch.		Out of business.
2555	Leach, Louis J.	August 8, 1893	By examination.	Lawler.	New Hampton.	
2576	Landon, O. M.	May 23, 1894	By examination.	Lowia City.		
2757	Louis, Henry.	June 30, 1894	By examination.	Columbus Junction.	Nora Springs.	
2776	Lamberson, W. B.	December 16, 1894	By examination.	Charles City.		
2821	Legel, John G.	April 8, 1895	By examination.	Sheldahl.	Slater.	
2858	Landa, Amos A.	July 23, 1895	By examination.	Des Moines.	Oakland.	
2906	Lenocker, A. A.	September 15, 1895	By examination.	Independence.	Cedar Rapids.	
2925	Longbeckard, A.	March 4, 1896	By examination.	Waterloo.	Des Moines.	
2969	Lawrence, Ezra C.	October 16, 1896	By examination.	Lone Tree.	Lisbon.	
3069	Lee, J. Allison.	January 18, 1897	By examination.	Monroe.		In Nebraska.
3123	Lear, D. W. L.	February 1, 1897	By examination.	Hawarden.		
3194	Lendis, Jesse E.	May 2, 1897	By examination.	Murray.		
3233	Lakin, A. M.	June 7, 1897	By examination.	Yale.	Oscola.	
3256	Landon, Judd E.	June 16, 1897	By examination.	Lawler.	(For Yale only).	
3296	Longwell, Jesse.	August 16, 1897	By examination.	Wellman.		
3306	Lennon, A. D.	September 1, 1897	By examination.	Guthrie Center.		
3364	Little, Charles.	January 22, 1898	By examination.	Lamont.	Sexton.	
3394	Lindley, J. M.	February 17, 1898	By examination.	Winfield.		
3454	Liek, Chan. W.	May 14, 1898	By examination.	Dubuque.		
3455	Lewis, G. W.	July 11, 1898	By examination.	Grinnell.		
3489	Landler, Will R.	July 17, 1898	By examination.	Marshalltown.	Sioux City.	
3501	Laughlin, M. R.	August 8, 1898	By examination.	Boone.	Perry.	
3512	Lawrence, E. S.	August 23, 1898	By examination.	Redding.	Burlington.	
3551	Lawhead, W. E.	September 18, 1898	By examination.	Des Moines.		
3593	Leach, George E.	March 9, 1899	By examination.	Creston.	Silver City.	
3636	Lundvall, N. A.	April 21, 1899	By examination.	Dayton.		
3666	La Penotiere, John A.	May 6, 1899	By examination.	Grand Junction.	Sioux Falls.	
3699	LaForce, D. A.	August 28, 1899	By examination.	Ottumwa.	Easton, Minn.	
3716	Love, Charles.	September 18, 1899	By examination.	New Market.	Bedford.	
3739	Lillis, L. M.	December 9, 1899	By examination.	Marion.		
3778	Loomis, F. W.	December 23, 1899	By examination.	Shannon City.		

		In Minnesota.			
1798	Lloyd, James H.	January	1890	By examination.	West Branch.
1800	Lisbarrack, L. H.	January	1890	By examination.	Cedar Rapids.
1802	Lisbarrack, L. H.	February	1890	By examination.	Osceola.
1804	Lisbarrack, L. H.	March	1890	By examination.	St. Dodge.
1806	Lisbarrack, L. H.	July	1890	By examination.	Dubuque.
1808	Lisbarrack, L. H.	September	1890	By examination.	St. Louis City.
1810	Lisbarrack, L. H.	November	1890	By examination.	Garrison.
1812	Lisbarrack, L. H.	May	1891	By examination.	Wall Lake.
1814	Lisbarrack, L. H.	August	1891	By examination.	Walling.
1816	Lisbarrack, L. H.	October	1891	By examination.	Waterloo.
1818	Lisbarrack, L. H.	August	1892	Graduate.	Grundy Center.
1820	Lisbarrack, L. H.	August	1892	By examination.	Willisca.
1822	Lisbarrack, L. H.	October	1892	By examination.	Anes.
1824	Lisbarrack, L. H.	December	1892	By examination.	Grand Junction.
1826	Lisbarrack, L. H.	March	1893	By examination.	Independence.
1828	Lisbarrack, L. H.	March	1893	By examination.	Manson.
1830	Lisbarrack, L. H.	March	1893	By examination.	Paton.
1832	Lisbarrack, L. H.	April	1893	By examination.	Burlington.
1834	Lisbarrack, L. H.	June	1893	By examination.	Cherokee.
1836	Lisbarrack, L. H.	August	1893	By examination.	Newton.
1838	Lisbarrack, L. H.	February	1894	By examination.	Remsen.
1840	Lisbarrack, L. H.	February	1894	By examination.	Dallas Center.
1842	Lisbarrack, L. H.	March	1894	By examination.	Lamont.
1844	Lisbarrack, L. H.	March	1894	By examination.	Shelton.
1846	Lisbarrack, L. H.	April	1894	By examination.	Shelton.
1848	Lisbarrack, L. H.	April	1894	By examination.	Alka.
1850	Lisbarrack, L. H.	June	1894	By examination.	Amos.
1852	Lisbarrack, L. H.	September	1894	By examination.	Lins Springs.
1854	Lisbarrack, L. H.	October	1894	By examination.	Fond.
1856	Lisbarrack, L. H.	October	1894	By examination.	Hempden.
1858	Lisbarrack, L. H.	November	1894	By examination.	Danbury.
1860	Lisbarrack, L. H.	December	1894	By examination.	Murray.
1862	Lisbarrack, L. H.	March	1894	By examination.	Dunlap.
1864	Lisbarrack, L. H.	March	1894	By examination.	Oscola.
1866	Lisbarrack, L. H.	April	1894	By examination.	St. Louis City.
1868	Lisbarrack, L. H.	May	1895	By examination.	Eagle Grove.
1870	Lisbarrack, L. H.	July	1895	By examination.	Dubuque.
1872	Lisbarrack, L. H.	December	1895	By examination.	Grundy Center.
1874	Lisbarrack, L. H.	January	1896	By examination.	Orange City.
1876	Lisbarrack, L. H.	February	1896	By examination.	Ledyard.
1878	Lisbarrack, L. H.	March	1896	By examination.	Lisbon.
1880	Lisbarrack, L. H.	April	1896	By examination.	Clinton.
1882	Lisbarrack, L. H.	September	1896	By examination.	Pleasantville.
1884	Lisbarrack, L. H.	November	1896	By examination.	Gowrie.
1886	Lisbarrack, L. H.	March	1897	By examination.	Lecaire.
1888	Lisbarrack, L. H.	April	1897	By examination.	Perry.
1890	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1892	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1894	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1896	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1898	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1900	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1902	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1904	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1906	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1908	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1910	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1912	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1914	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1916	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1918	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1920	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1922	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1924	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1926	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1928	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1930	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1932	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1934	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1936	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1938	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1940	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1942	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1944	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1946	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1948	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1950	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1952	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1954	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1956	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1958	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1960	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1962	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1964	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1966	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1968	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1970	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1972	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1974	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1976	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1978	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1980	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1982	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1984	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1986	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1988	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1990	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1992	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1994	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1996	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
1998	Lisbarrack, L. H.	June	1897	By examination.	Monroe.
2000	Lisbarrack, L. H.	June	1897	By examination.	Monroe.

ABSTRACT—CONTINUED.

Number of certificates	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
5286	Litzrodt, E. P.	August 1, 1897	Graduate	Council Bluffs	Burlington.	
5291	Large, J. B.	July 6, 1897	By examination	De Witt	Ruthven.	
5292	Larch, Fred, Jr.	July 6, 1897	By examination	Sioux City.		In Illinois.
5316	Lenz, W. L.	August 16, 1895	By examination	Bellevue		
5393	Lyman, D. J.	February 1, 1898	By examination	Iowa Falls.		In Ohio.
5414	Liffring, E. A.	March 1, 1898	By examination	Janessville		
5488	Loar, G. W.	April 5, 1898	By examination	Monroe.		
5481	Lomas, E. T.	April 5, 1898	By examination	Cresco.		
5509	Leytze, F. C.	April 5, 1898	By examination	Independence.		
5545	Langness, Olaf	August 2, 1898	Graduate	Ives Moines	Baltic, S. D.	
5556	Large, A. F.	August 2, 1898	By examination	Breslyville.		
5598	Lott, H. V.	September 7, 1898	Graduate	Cedar Rapids	Rockwell City.	In Illinois.
5610	Le Gore, J. F.	December 6, 1898	By examination	Churidan		
5611	Letson, G. A.	December 6, 1898	By examination	Council Bluffs.		
5629	Linn, O. A.	December 7, 1899	By examination	Burlington	Cavenport.	
5675	Le Fevre, L. K.	February 23, 1899	Graduate	Keokuk	Spokane, Wash.	
5690	Lang, William	April 23, 1899	Graduate	Muscataine		
5709	Lennon, J. E.	June 6, 1899	Graduate	Washington.		
5719	Lamm, J. J.	July 6, 1899	Graduate	Decorah		In Minnesota.
5728	Lomen, Gustave	July 6, 1899	By examination	Conway		
5739	Liggett, B. W.	July 6, 1899	By examination	Davenport	Des Moines.	
5820	Laufer, G. G.	September 23, 1899	Graduate	Independence.		
5828	Lindsay, H. A.	October 4, 1899	By examination	Sabula.		
5838	Leigh, H. J.	October 4, 1899	By examination	Roland.	Cambridge.	
5851	Lexvold, E. H.	November 8, 1899	By examination	Pella.		
5862	Langeraak, Henry M.	November 8, 1899	By examination	Grand Junction.		
5873	Lowery, John R.	December 5, 1899	By examination	Forest City	Fonda.	
5910	Lewis, F. T.	February 6, 1900	By examination	Marengo.		
5921	Lyons, Chas. T.	February 6, 1900	By examination	Des Moines.		
5921	Landfors, Edward	February 6, 1900	By examination	Clarinda.		
5966	Linbocker, E. R.	February 6, 1900	By examination	Avoca		
5978	Lauestad, M. P.	March 3, 1900	By examination	Iowa City	Dysart.	
6021	Lamsden, W. T.	April 1, 1900	By examination	Ely.		
6074	Lorenz, Joseph	May 10, 1900	By examination	Davenport.		
6077	Luge, William	July 7, 1900	Graduate	Cherokee	Steamboat Rock.	In S. Dakota.
6123	Lyon, Chas. G.	August 2, 1900	Graduate	Des Moines		
6143	Lewis, George N.	October 2, 1900	Graduate			

6215	Long, Fred W.	February	5, 1901	Graduate	New Vienna	Hills.
6246	Lighty, J. E.	March	6, 1901	Graduate	Kesley	
6297	Loucks, Grace	May	7, 1901	Graduate	Danbury.	Kiron.
6397	Lindsay, H. H.	August	7, 1901	By examination	Avoca	Independence.
6448	Lusby, E. W.	September	1, 1901	Graduate	Sioux City	In Wisconsin.
6442	Landbaum, R. H.	October	1, 1901	Graduate	Eagle Grove	
6509	Loes, John R.	December	8, 1901	By examination	Dubuque	Des Moines.
6516	Littfield, H. H.	January	6, 1902	Graduate	Baldwin	
6526	Lundeen, K.	January	7, 1902	Graduate	Des Moines	
6533	Lockwood, L. D.	January	7, 1902	By examination	Bayard	Maxwell.
6563	Lloyd, E. W.	March	4, 1902	Graduate	Des Moines	
6567	Longacker, Holton	March	4, 1902	Graduate	Des Moines	In Wisconsin.
6603	Loucks, Richard	April	1, 1902	Graduate	Danbury	In Nebraska.
6618	Longwell, A. F.	April	1, 1902	Graduate	Wellman	
6726	Ladd, J. P.	June	20, 1902	Graduate	Sioux City	
6801	Long, Chas. F.	August	6, 1902	By examination	Whitten	
6802	Long, Chas. F.	August	6, 1902	By examination	Spencer	Peterson.
6802	Larsen, A. W.	August	6, 1902	By examination	Crawfordsville	Indianola.
6804	Loose, N. J.	August	6, 1902	By examination	Gladbrook	Orange City.
6822	Lee, Arthur	August	6, 1902	Graduate	Maurice	
6840	Lubbers, Henry	August	6, 1902	Graduate	Des Moines	In Nebraska.
6870	Linton, A. W.	October	7, 1902	By examination	Bayard	
6882	Lynch, W. A.	October	7, 1902	By examination	Des Moines	In Indiana.
6882	Lilves, E. M.	November	2, 1902	By examination	Iowa Falls	
6882	Long, U. G.	December	3, 1902	By examination	Mystic	Woodbine.
6885	Lee, R. E.	February	8, 1903	Graduate	Chariton	
6885	Latta, Don	February	8, 1903	By examination	Manchester	
6888	Lillibridge, C. B.	February	8, 1903	Graduate	Des Moines	In Illinois.
6897	Lyons, J. B.	March	7, 1903	Graduate	Guthrie Center	
6897	Leamon, Roy A.	April	7, 1903	Graduate	Des Moines	In Wisconsin.
6897	Lee, S. L.	April	7, 1903	By examination	Des Moines	In Nebraska.
6897	Loke, C. L.	April	7, 1903	By examination	Hampson	
6898	Lindstrom, J. E.	April	7, 1903	By examination	Des Moines	In Nebraska.
6899	Lonseth, Otto	April	7, 1903	By examination	Sioux City	
189	Mallan, M. F.	June	4, 1890	As owner	Pomeroy	
232	Major, E. E.	June	4, 1890	As owner	Anita	Out of business.
233	Montgomery, G. S.	June	4, 1890	As owner	Atlantic	
236	Mitchell, John H.	June	17, 1890	As owner	Bloomfield	Ottumwa.
237	Mitchell, William S.	July	17, 1890	As owner	Bloomfield	Mt. Pleasant.
267	Mausby, Ellis P.	June	17, 1890	As owner	C. sey	
433	Maurid, R.	June	23, 1890	As owner	Dysart	Beatrice, Neb.
536	Meisner, Amilus	June	26, 1890	As owner	Davenport	
578	Morden, W. C.	June	26, 1890	As owner	Fulton	Maquoketa.
638	Mann, James	June	27, 1890	As owner	Hamburg	
716	Montgomery, W. H.	June	28, 1890	As owner	Decorah	
753	Markley, G. H.	June	9, 1893	As owner	Laurens	Out of business.
801	Munger, J. P.	June	4, 1890	As owner	Malvern	
915	Mallory, Dwight	July	2, 1890	As owner	Boonsboro.	Jamestown, Cal.
916	Mallory, Wm. A.	July	2, 1890	As owner	Boonsboro.	
961	Miles, A. H.	July	2, 1890	As owner	Des Moines	

2961	Miller, Severin	January	19, 1899	By examination	Davenport	San Francisco, Cal.
2962	Mulnix, J. A.	February	16, 1899	By examination	Dows	
2963	Moore, Elias H.	May	8, 1899	Graduate	Sioux City	
2964	Moore, Arthur J.	May	8, 1899	Graduate	Sioux City	
2965	Moore, Charles H.	September	17, 1899	By examination	Eagle Grove	
2966	Merrill, John T.	October	7, 1899	By examination	Mt. Ayr	
2967	May, George E.	November	5, 1899	By examination	Charles City	
2968	Miller, O. E.	November	22, 1899	By examination	Cedar Rapids	Out of business.
2969	Maxwell, W. J.	March	30, 1897	By examination	Avoca	Grinnell
2970	Machnessy, W. T.	April	5, 1897	By examination	Bagley	
2971	Mason, G.	April	19, 1897	By examination	Goldfield	Kanawha.
2972	Morgan, Ferd E.	August	18, 1897	By examination	Cromwell	Sidney.
2973	Mullarky, W. G.	January	18, 1898	By examination	Holland	Cedar Falls.
2974	Moore, Alfred E.	February	7, 1898	By examination	Wayland	
2975	Mower, J. R.	February	9, 1898	By examination	Washita	
2976	Mathews, G. W.	February	8, 1898	By examination	Lenox	Sioux City.
2977	Mitchell, A. S.	March	18, 1898	By examination	Marion	Kansas City Mo.
2978	Marshall, F. A.	April	20, 1898	By examination	Malvern	Springfield, Ill.
2979	Mollenhoff, J. P.	September	17, 1898	By examination	Stanton	
2980	Mollison, W. T.	May	29, 1897	Graduate	Ottumwa	In Nebraska.
2981	Mulhern, J. W.	June	9, 1898	By examination	Greenfield	In Minnesota.
2982	Meyers, Ed. G.	August	21, 1898	By examination	Reinbeck	
2983	Mathews, W. H.	September	4, 1898	By examination	Delta	Des Moines.
2984	McDowell, A.	October	4, 1898	By examination	Galva	Crystal Lake.
2985	Marsh, W. L.	December	1, 1898	By examination	Albion	
2986	Morgan, James W.	January	1, 1898	By examination	Columbus Junction	
2987	Myers, F. B.	January	2, 1899	By examination	Andubon	
2988	Myers, F. B.	March	12, 1899	By examination	Iowa City	In Nebraska.
2989	Mershon, G. A.	March	12, 1899	By examination	Bayard	
2990	Moody, Clarke B.	September	1, 1899	By examination	Plainfield	Liscomb.
2991	Maheke, George	October	1, 1899	By examination	Des Moines	Ionia.
2992	Moore, G. A.	October	21, 1899	By examination	Atalissa	West Liberty.
2993	Mietzel, E. A.	January	21, 1899	By examination	Des Moines	Davenport.
2994	Miller, H. D.	January	22, 1899	By examination	Stanwood	Ames.
2995	Mullins, A. B.	March	4, 1899	By examination	Iowa	
2996	Mills, J. Fred G.	March	7, 1899	By examination	Earlham	Mason City.
2997	Mahert, Ernest	May	7, 1899	By examination	Remsen	
2998	McGowan, E.	August	5, 1899	By examination	Reinbeck	
2999	Millerton, M. F.	September	5, 1899	By examination	McCook	Castana.
3000	Miller, Charles I.	October	7, 1899	By examination	Galva City	St. Atkinson.
3001	Miller, Frank T.	October	10, 1899	By examination	Sioux City	Galva.
3002	Mulder, J. R.	December	26, 1899	By examination	South Center	
3003	Mulder, J. R.	December	26, 1899	By examination	Earlham	
3004	Miller, Ralph H.	March	7, 1891	By examination	Waterloo	Menlow.
3005	Mitchell, Mrs. E. H.	June	2, 1891	By examination	Upton	Algona.
3006	Moed, C. L.	November	15, 1891	By examination	Upton	Struble.
3007	Mead, C. L.	November	15, 1891	By examination	Upton	
3008	Mead, C. L.	January	18, 1892	By examination	Upton	
3009	Mead, C. L.	January	18, 1892	By examination	Upton	
3010	Mead, C. L.	January	18, 1892	By examination	Upton	
3011	Mead, C. L.	January	18, 1892	By examination	Upton	
3012	Mead, C. L.	January	18, 1892	By examination	Upton	
3013	Mead, C. L.	January	18, 1892	By examination	Upton	
3014	Mead, C. L.	January	18, 1892	By examination	Upton	
3015	Mead, C. L.	January	18, 1892	By examination	Upton	
3016	Mead, C. L.	January	18, 1892	By examination	Upton	
3017	Mead, C. L.	January	18, 1892	By examination	Upton	
3018	Mead, C. L.	January	18, 1892	By examination	Upton	
3019	Mead, C. L.	January	18, 1892	By examination	Upton	
3020	Mead, C. L.	January	18, 1892	By examination	Upton	
3021	Mead, C. L.	January	18, 1892	By examination	Upton	
3022	Mead, C. L.	January	18, 1892	By examination	Upton	
3023	Mead, C. L.	January	18, 1892	By examination	Upton	
3024	Mead, C. L.	January	18, 1892	By examination	Upton	
3025	Mead, C. L.	January	18, 1892	By examination	Upton	
3026	Mead, C. L.	January	18, 1892	By examination	Upton	
3027	Mead, C. L.	January	18, 1892	By examination	Upton	
3028	Mead, C. L.	January	18, 1892	By examination	Upton	
3029	Mead, C. L.	January	18, 1892	By examination	Upton	
3030	Mead, C. L.	January	18, 1892	By examination	Upton	
3031	Mead, C. L.	January	18, 1892	By examination	Upton	
3032	Mead, C. L.	January	18, 1892	By examination	Upton	
3033	Mead, C. L.	January	18, 1892	By examination	Upton	
3034	Mead, C. L.	January	18, 1892	By examination	Upton	
3035	Mead, C. L.	January	18, 1892	By examination	Upton	
3036	Mead, C. L.	January	18, 1892	By examination	Upton	
3037	Mead, C. L.	January	18, 1892	By examination	Upton	
3038	Mead, C. L.	January	18, 1892	By examination	Upton	
3039	Mead, C. L.	January	18, 1892	By examination	Upton	
3040	Mead, C. L.	January	18, 1892	By examination	Upton	
3041	Mead, C. L.	January	18, 1892	By examination	Upton	
3042	Mead, C. L.	January	18, 1892	By examination	Upton	
3043	Mead, C. L.	January	18, 1892	By examination	Upton	
3044	Mead, C. L.	January	18, 1892	By examination	Upton	
3045	Mead, C. L.	January	18, 1892	By examination	Upton	
3046	Mead, C. L.	January	18, 1892	By examination	Upton	
3047	Mead, C. L.	January	18, 1892	By examination	Upton	
3048	Mead, C. L.	January	18, 1892	By examination	Upton	
3049	Mead, C. L.	January	18, 1892	By examination	Upton	
3050	Mead, C. L.	January	18, 1892	By examination	Upton	
3051	Mead, C. L.	January	18, 1892	By examination	Upton	
3052	Mead, C. L.	January	18, 1892	By examination	Upton	
3053	Mead, C. L.	January	18, 1892	By examination	Upton	
3054	Mead, C. L.	January	18, 1892	By examination	Upton	
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3057	Mead, C. L.	January	18, 1892	By examination	Upton	
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3060	Mead, C. L.	January	18, 1892	By examination	Upton	
3061	Mead, C. L.	January	18, 1892	By examination	Upton	
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3063	Mead, C. L.	January	18, 1892	By examination	Upton	
3064	Mead, C. L.	January	18, 1892	By examination	Upton	
3065	Mead, C. L.	January	18, 1892	By examination	Upton	
3066	Mead, C. L.	January	18, 1892	By examination	Upton	
3067	Mead, C. L.	January	18, 1892	By examination	Upton	
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3069	Mead, C. L.	January	18, 1892	By examination	Upton	
3070	Mead, C. L.	January	18, 1892	By examination	Upton	
3071	Mead, C. L.	January	18, 1892	By examination	Upton	
3072	Mead, C. L.	January	18, 1892	By examination	Upton	
3073	Mead, C. L.	January	18, 1892	By examination	Upton	
3074	Mead, C. L.	January	18, 1892	By examination	Upton	
3075	Mead, C. L.	January	18, 1892	By examination	Upton	
3076	Mead, C. L.	January	18, 1892	By examination	Upton	
3077	Mead, C. L.	January	18, 1892	By examination	Upton	
3078	Mead, C. L.	January	18, 1892	By examination	Upton	
3079	Mead, C. L.	January	18, 1892	By examination	Upton	
3080	Mead, C. L.	January	18, 1892	By examination	Upton	
3081	Mead, C. L.	January	18, 1892	By examination	Upton	
3082	Mead, C. L.	January	18, 1892	By examination	Upton	
3083	Mead, C. L.	January	18, 1892	By examination	Upton	
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3085	Mead, C. L.	January	18, 1892	By examination	Upton	
3086	Mead, C. L.	January	18, 1892	By examination	Upton	
3087	Mead, C. L.	January	18, 1892	By examination	Upton	
3088	Mead, C. L.	January	18, 1892	By examination	Upton	
3089	Mead, C. L.	January	18, 1892	By examination	Upton	
3090	Mead, C. L.	January	18, 1892	By examination	Upton	
3091	Mead, C. L.	January	18, 1892	By examination	Upton	
3092	Mead, C. L.	January	18, 1892	By examination	Upton	
3093	Mead, C. L.	January	18, 1892	By examination	Upton	
3094	Mead, C. L.	January	18, 1892	By examination	Upton	
3095	Mead, C. L.	January	18, 1892	By examination	Upton	
3096	Mead, C. L.	January	18, 1892	By examination	Upton	
3097	Mead, C. L.	January	18, 1892	By examination	Upton	
3098	Mead, C. L.	January	18, 1892	By examination	Upton	
3099	Mead, C. L.	January	18, 1892	By examination	Upton	
3100	Mead, C. L.	January	18, 1892	By examination	Upton	
3101	Mead, C. L.	January	18, 1892	By examination	Upton	
3102	Mead, C. L.	January	18, 1892	By examination	Upton	
3103	Mead, C. L.	January	18, 1892	By examination	Upton	
3104	Mead, C. L.	January	18, 1892	By examination	Upton	
3105	Mead, C. L.	January	18, 1892	By examination	Upton	
3106	Mead, C. L.	January	18, 1892	By examination	Upton	
3107	Mead, C. L.	January	18, 1892	By examination	Upton	
3108	Mead, C. L.	January	18, 1892	By examination	Upton	
3109	Mead, C. L.	January	18, 1892	By examination	Upton	
3110	Mead, C. L.	January	18, 1892	By examination	Upton	
3111	Mead, C. L.	January	18, 1892	By examination	Upton	
3112	Mead, C. L.	January	18, 1892	By examination	Upton	
3113	Mead, C. L.	January	18, 1892	By examination	Upton	
3114	Mead, C. L.	January	18, 1892	By examination	Upton	
3115	Mead, C. L.	January	18, 1892	By examination	Upton	
3116	Mead, C. L.	January	18, 1892	By examination	Upton	
3117	Mead, C. L.	January	18, 1892	By examination	Upton	
3118	Mead, C. L.	January	18, 1892	By examination	Upton	
3119	Mead, C. L.	January	18, 1892	By examination	Upton	
3120	Mead, C. L.	January	18, 1892	By examination	Upton	
3121	Mead, C. L.	January	18, 1892	By examination	Upton	
3122	Mead, C. L.	January	18, 1892	By examination	Upton	
3123	Mead, C. L.	January	18, 1892	By examination	Upton	
3124	Mead, C. L.	January	18, 1892	By examination	Upton	
3125	Mead, C. L.	January	18, 1892	By examination	Upton	
3126	Mead, C. L.	January	18, 1892	By examination	Upton	
3127	Mead, C. L.	January	18, 1892	By examination	Upton	
3128	Mead, C. L.	January	18, 1892	By examination	Upton	
3129	Mead, C. L.	January	18, 1892	By examination	Upton	
3130	Mead, C. L.	January	18, 1892	By examination	Upton	
3131	Mead, C. L.	January	18, 1892	By examination	Upton	
3132	Mead, C. L.	January	18, 1892	By examination	Upton	
3133	Mead, C. L.	January	18, 1892	By examination	Upton	
3134	Mead, C. L.	January	18, 1892	By examination	Upton	
3135	Mead, C. L.	January	18, 1892	By examination	Upton	
3136	Mead, C. L.	January	18, 1892	By examination	Upton	
3137	Mead, C. L.	January	18, 1892	By examination	Upton	
3138	Mead, C. L.	January	18, 1892	By examination	Upton	
3139	Mead, C. L.	January	18, 1892	By examination	Upton	
3140	Mead, C. L.	January	18, 1892	By examination	Upton	
3141	Mead, C. L.	January	18, 1892	By examination	Upton	
3142	Mead, C. L.	January	18, 1892	By examination	Upton	
3143	Mead, C. L.	January	18, 1892	By examination	Upton	
3144	Mead, C. L.	January	18, 1892	By examination	Upton	
3145	Mead, C. L.					

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
4212	Mullins, U. S.	April	By examination.	Atlanta.	Clear Lake.	
4245	Mathews, F. A.	June	By examination.	Algona.	Bloomfield.	
4245	Martin, D. T.	June	By examination.	Pomeroy.		
4277	Mathews, Charles W.	July	By examination.	Pulaski.		
4340	Mawhor, J. C.	December	By examination.	Riverton.		
4373	Mackrell, W. A.	February	By examination.	Onslow.		
4436	Mewhirer, H.	April	By examination.	Paulina.		In Minnesota.
4453	Marner, W. R.	May	By examination.	Miles.		
4497	Miller, George.	August	By examination.	Dallas Center.	Churdan.	
4500	Morchart, William J.	August	By examination.	Sioux City.		In Minnesota.
4511	May, B. Wood	September	By examination.	Charles City.		
4515	Moore, Charles W.	September	By examination.	Birmingham.		
4623	Morrison, W. W.	September	By examination.	Iowa City.	Oakalosa.	
4625	Morrison, Theo. L.	October	By examination.	Seymour.	Albia.	Out of business.
4598	Miller, George D.	November	By examination.	Albia.		
4591	Marshall, C. Jr.	March	By examination.	Ackley.	Hampton.	
4591	Mettlin, A. J.	March	By examination.	Oakwin.		
4598	Miles, C. W.	March	A graduate.	Charles City.		
4609	Merner, D. C.	April	By examination.	Cedar Falls.	Allison.	
4625	Marsh, Walter K.	April	By examination.	Fairfield.	Pelevia.	
4651	Mosher, A. H.	May	By examination.	Ireton.		
4674	Maher, William F.	May	By examination.	Fort Dodge.		
4697	Morgan, F. H.	July	By examination.	Council Bluffs.		
4718	Mulack, H. Jr.	September	By examination.	Manson.		
4740	Mazanti, Henry	September	By examination.	Cedar Falls.		
4740	Major, Charles W.	May	By examination.	Anita.		
4779	Masenberg, Lou.	November	By examination.	Council Bluffs.		
4815	Miles, Charles L.	February	By examination.	Charles City.	Lenox.	
4836	Maiden, Walter J.	March	By examination.	Clearfield.		
4846	Miles, C.	March	By examination.	Des Moines.		
4839	Mulligan, M. P.	April	By examination.	Swale'sale.		
4890	Madsen, J.	June	By examination.	Jewell Junction.		
4912	Murray, Mrs. Mamie E.	July	By examination.	Rudd View.	Gray.	
4902	Mertiz, C. Eugene.	July	By examination.	Linden.		
4933	Mallory, J. A.	October	By examination.	Davenport.		
4941	McNatt, John H.	December	Graduate.	Waterloo.	Ogden, Utah.	
4941	Munger, D. M.	April	By examination.			

5094	Miller, George	April	By examination	Conrad	In Illinois.
5070	Nutcher, J. S.	May	By examination	Cedar Rapids	
5071	Moore, C. J.	May	By examination	Manson	
5081	Minthorn, Edith	May	By examination	Moorehead	
5083	Marshall, O. E.	June	By examination	Iowa Falls	
5082	Meade, N. P.	June	By examination	Akron	
5103	Moeling, A. D.	June	By examination	Forest City	
5114	Merritt, F. H.	July	By examination	Ossian	
5116	Moore, E. J.	July	By examination	Eldon	
5165	Millark, E. E.	October	By examination	Holland	
5165	Mythe, O. G.	November	By examination	Fetherville	
5168	Martin, P. J.	December	By examination	Jesup	
5174	Martin, P. J.	December	By examination	Lake City	
5176	Manlon, P. H.	December	By examination	Charlotte	
5196	Milz, W. F.	February	By examination	Janesville	
5202	Murray, W. P.	February	By examination	Melrose	
5204	Magee, E. W.	February	By examination	Dunkerton	
5211	Malloy, J. E.	March	By examination	New Hampton	
5234	Mammen, M. H.	April	By examination	Le Mars	
5242	Miller, C. J.	April	By examination	Waterloo	
5243	Miller, D. J.	April	By examination	Algona	
5263	Murrey, W. E.	May	By examination	Des Moines	
5268	Meizian, H. F.	May	By examination	Burlington	
5270	Miller, J. J.	May	By examination	Aokley	
5318	Mollison, A. E.	September	By examination	Ottumwa	
5334	Mann, S. M.	October	By examination	Maynard	
5335	Marquis, F. L.	October	By examination	Alexander	
5347	Meyer, H. C.	October	By examination	Ottumwa	
5415	Morrow, C. F.	November	By examination	Bellevue	
5421	Mathews, J. R.	March	By examination	Sigourney	
5446	Markham, A. J.	April	By examination	Blanchard	
5474	Markham, W. H.	April	By examination	Iowa Falls	
5475	Maynard, W. H.	April	By examination	Marion	
5483	Moment, E. F.	April	By examination	Ottumwa	
5489	Mathieson, J. C.	April	By examination	Central City	
5559	Miller, F. W.	September	Graduate	Clinton	
5570	Mills, F. W.	September	By examination	West Liberty	
5586	Marsch, W. A.	November	By examination	Ottumwa	
5594	Morris, C. J.	November	Graduate	Guthrie Center	
5614	Munn, J. C.	December	Graduate	Cedar Rapids	
5627	Munn, J. C.	January	By examination	Des Moines	
5627	Mosier, D. C.	January	Graduate	Atlantic	
5631	Miller, W. C.	February	By examination	Macdonia	
5643	Morrison, Ed D.	February	By examination	Des Moines	
5643	Morrison, A. E.	March	Graduate	Algona	
5657	Mittelsky, E. C.	April	Graduate	Cedar Rapids	
5681	Meinzer, H. N.	April	By examination	Sioux City	
5701	Moore, F. W.	May	By examination	Algona	
5727	Muesse, F. W.	May	Graduate	Dubuque	
5736	Mott, D. W.	July	Graduate	Muscantine	
5736		July		Clinton	In Texas.
				Chicago, Ill.	
				Valley Junction	
				Centerville	
				Eagle Grove	
				Algona	
				Sioux City	
				Cedar Rapids	
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				Sioux City	

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
5742	Manning, E. D.	July 6, 1899	By examination	Des Moines	Ladd, Ill.	
5747	Mackin, B. G.	July 18, 1899	By examination	Independence	Aurora.	
5754	Mulvihill, E. F.	August 1, 1899	Graduate	Masonville.	O'Neil, Neb.	
5772	Morse, Edna L.	August 1, 1899	Graduate	Des Moines	Garret-on, S. D.	
5775	Moore, T. J.	August 1, 1899	Graduate	Des Moines	Chicago, Ill.	
5777	Neenan, L. W.	August 1, 1899	Graduate	Waterloo		
5782	Nurray, M. J.	August 1, 1899	By examination	Charles City.		
5798	Moran, Van Allen	September 6, 1899	Graduate	Des Moines		
5811	Muller, Henry F.	September 28, 1899	Graduate	Davenport		
5835	Miskimins, H. M.	September 28, 1899	Graduate	Des Moines		
5844	Meeker, J. P.	November 8, 1899	Graduate	Des Moines		
5847	Morris, Louis E.	November 8, 1899	Graduate	Waterloo		
5848	Martin, Sanford A.	November 8, 1899	Graduate	Clarinda		
5849	Mitchell, John Francis	November 8, 1899	Graduate	Clinton		
5883	Mitchell, J. A.	December 21, 1899	Graduate	Clinton		
5923	Manning, C. A.	January 21, 1899	By examination	Des Moines	Montana, City.	
5925	Miller, E. J.	February 6, 1899	By examination	Des Moines	Webster.	
5926	Miller, E. J.	February 6, 1899	By examination	Des Moines	Council Bluffs.	
5927	Miller, E. J.	February 6, 1899	By examination	Des Moines	Kierlin.	
5934	Morgan, Rosa B.	April 8, 1899	By examination	Villarsburg.		
5941	Middleworth, W. C.	April 8, 1899	By examination	Council Bluffs.		
5992	Middleworth, W. C.	June 1, 1899	Graduate	Mt. Ayr.	Eagle Grove.	
6008	Miller, F. William	June 1, 1899	Graduate	Honkstad		
6009	Merckel, Carl D.	June 1, 1899	Graduate	Charles City.		
6020	Marcy, Frank L.	June 1, 1899	Graduate	Dartmouth		
6080	Marce, Samuel R.	May 8, 1899	Graduate	Des Moines	State Center.	
6088	Mason, Stephen A.	July 7, 1899	By examination	Des Moines		
6110	Miller, Carl E. T.	August 4, 1899	Graduate	Des Moines		
6121	Mathes, Geo. A.	September 2, 1899	Graduate	Valley Junction		
6138	Maculsky, W. A.	October 2, 1899	Graduate	Fontanelle	Fernald.	
6145	Mosely, E. B.	October 2, 1899	Graduate	Earlham	Greenfield.	
6162	Moskopy, Albert	November 4, 1899	Graduate	Des Moines	Lancaster.	
6181	Millen, Chas. C.	December 4, 1899	Graduate	Conrad	Arkansas.	
6188	Masten, Willis A.	December 4, 1899	By examination	Galva.		
6201	Meyers, Willis A.	December 4, 1899	As assistant	Greenfield.		
6228	Mortland, Arthur C.	February 1, 1899	By examination	Grinnell.		
6280	Mortland, Arthur C.	March 1, 1899	Graduate	Davenport	St. Ansgar.	
6242	Madowell, Harry	March 1, 1899	By examination	Crystal Lake.		

6257	Mortenson, Frank E.	April	1901	By examination	Britt.	Clarion.	In Kansas.
6270	Morgan, John W.	May	1901	Graduate	Ames		
6272	Mack, Chas. L.	May	1901	Graduate	Council Bluffs.	Jamaica.	
6284	Morrison, W. H.	May	1901	By examination	Monroe	Red Oak.	
6284	Morgan, T. W.	June	1901	By examination	Edgewood	Monona.	
6284	Maters, J. A.	June	1901	By examination	Luxemburg		
6287	Maxey, M. W.	June	1901	Graduate	What Cheer.		
6289	Morin, E. F.	August	1901	By examination	Cedar Falls.	Valley Junction.	
6406	Miller, S. J.	August	1901	Graduate	Des Moines	Indianola.	
6407	Mahoney, F. A.	September	1901	Graduate	Victor	Washita.	
6420	Miller, W. H., Jr.	September	1901	By examination	Corringtonville		
6427	Mundie, J. D.	September	1901	By examination	Corning		
6438	Morris, C. L.	October	1901	Graduate	Carson	Wiota.	
6439	Murphy, J. R.	October	1901	Graduate	Waterloo		
6449	Mundt, J. H.	October	1901	Graduate	Council Bluffs.	Sibley.	
6478	Miller, W. B.	November	1901	By examination	Ackley		
6510	Nuchenthaler, R. W.	November	1901	By examination	Elgin	Davenport.	
6527	Nusser, C. H.	December	1901	By examination	Ransell		
6575	Martin, Geo. H.	February	1902	By examination	Des Moines		
6576	Mitchell, Edward	March	1902	By examination	Des Moines		
6601	Mills, E. V.	March	1902	Graduate	Jesson		
6601	Martin, W. K.	April	1902	By examination	Cedar Falls	Cooper.	
6606	March, W.	April	1902	By examination	Muscatine	Akron.	
6651	Morgan, A. W.	April	1902	By examination	Bloomer City		
6656	Maher, L. W. O.	May	1902	By examination	Rhodes		
6711	Merriman, Geo.	June	1902	Graduate	Stonx City		
6725	Mason, Geo. A.	June	1902	By examination	Cedar Rapids.		
6737	Moyer, F. O.	July	1902	Graduate	Lofts Creek.		
6769	Mittag, F. O.	August	1902	Graduate	Des Moines		
6770	Mills, Alfred	August	1902	Graduate	Manchester	Roland.	
6771	Miller, H. R.	August	1902	Graduate	Des Moines	Monmouth.	
6772	Moede, W. F.	August	1902	Graduate	Des Moines		
6773	Moran, T. A.	August	1902	Graduate	McIntosh	Ft. Madison.	
6805	Mathews, L. A.	August	1902	By examination	Mount Union		
6806	Maher, A. L.	August	1902	By examination	Pleasantville		
6822	Meyer, A. C.	August	1902	Graduate	Leon	Audubon.	
6841	Maguen, F. W.	August	1902	Graduate	Des Moines		
6842	McGee, F. W.	October	1902	Graduate	Osceola		
6843	Malachuk, Clara M.	October	1902	Graduate	Hampden		
6843	Malachuk, J. J.	October	1902	By examination	Council Bluffs.		
6853	Minder, Emma	October	1902	Graduate	Cedar Rapids		
6859	Miller, C. J.	November	1902	By examination	Stonx City		
6862	Mullan, Geo. H.	February	1903	Graduate	Council Bluffs.		
6865	Monahan, L. R.	March	1903	Graduate	Belmond		
6906	McMahon, Mahol	March	1903	Graduate	Des Moines		
6978	Manner, Bernard	April	1903	Graduate	Hampden		
6988	Musser, J. H.	April	1903	Graduate	Des Moines		
6988	Musser, J. E.	April	1903	Graduate	Aurora		
7000	McKenzie, H. M.	June	1903	By examination	Elwood		
188	McKenzie, E. M.	June	1903	As owner	Elwood		
189		June	1903	As assistant	Elwood		

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
800	McAhearn, W. H.	June 4, 1890	As assistant	Bloomfield.		
805	McCreary, W. M.	June 7, 1890	As owner	Centerville.		
806	McGrath, T. J.	June 18, 1890	As owner	Keokuk.		
1409	McBride, W. S.	July 18, 1890	By examination.	Marshalltown.		
1673	McGraw, C. A.	July 18, 1890	By examination.	Independence.		
1799	McGraw, H. H.	August 21, 1890	By examination.	Albia.		
1578	McDonald, J. W.	October 18, 1891	By examination.	Morning Sun.		
2158	McLain, George H.	June 16, 1891	By examination.	Vall.		
2143.	McLwain, R. H.	July 11, 1891	By examination.	Clarksville.		
2162	McGonigle, W. A.	July 11, 1891	By examination.	Monona.		
2236	McDermid, D. Jr.	October 7, 1891	By examination.	Victor.		
2313	McColm, J. T.	December 24, 1891	By examination.	Gravely.		
2346	McCless, C. H.	April 11, 1892	By examination.	Marne.		
2409	McColm, C. B.	April 8, 1892	By examination.	Hepburn.		
2516	McClintock, J. M.	June 8, 1892	By examination.	Rock Rapids.		
2541	McNab, Alex.	August 22, 1892	By examination.	Ames.		
2571	McBride, H. E.	February 27, 1893	By examination.	Rock Falls.		
2573	McFarlan, Thomas	February 27, 1893	By examination.	Rock Rapids.		
2718	McFarlane, C. M.	February 15, 1894	By examination.	Ames.		
2835	McNolan, E. C.	July 15, 1894	By examination.	Rock Falls.		
2895	McNunara, J. F.	January 15, 1896	By examination.	Des Moines.		
2905	McFarland, A. W.	January 15, 1896	By examination.	Des Moines.		
3073	McKay, Frank P.	September 15, 1897	By examination.	Dakota City.		
3157	McKay, E. A.	March 15, 1897	By examination.	Des Moines.		
3170	McKin, C.	March 15, 1897	By examination.	Missouri Valley.		
3249	McWilliams, J. J.	March 15, 1897	By examination.	Cliff.		
3267	McBride, W. J.	February 26, 1898	By examination.	Charter Oak.		
3281	McKibbin, C. A.	March 26, 1898	By examination.	Marshalltown.		
3287	McCallahan, R. J.	March 26, 1898	By examination.	Ames.		
3333	McCallahan, George.	May 17, 1899	By examination.	Humboldt.		
3388	McColm, J. L.	September 17, 1899	By examination.	Des Moines.		
3501	McConnell, P. G.	April 24, 1900	By examination.	Independence.		
4047	McDonald, J. E.	June 24, 1901	By examination.	Gravely.		
4097	McClure, Mamie O.	May 7, 1901	By examination.	Grinnell.		
4105	McKolvey, W. O.	July 7, 1901	By examination.	Mason City.		
4132	McMillan, R. A.	September 8, 1901	Graduate	Greenfield.		
4159	McGaheran, J. C.	November 8, 1901	By examination.	Iowa City.		
		February 1, 1893	By examination.	La Porte.		
						In Illinois.
						Oskaloosa.
						Los Angeles.
						Humboldt.
						St. Ansgar.
						Muscatine.
						Persia.
						Florence, Kan.
						Des Moines.
						Fullerton, Neb.
						Fort Dodge.
						Des Moines.
						Mt. Sterling.
						New York.
						Gravely.
						Grinnell.
						Mason City.
						Ryan.
						Genua, Neb.

4343	McGarvey, S. B.	June	1893	By examination.	Belle Plaine.	Schleswig.
4390	McArthur, F. B.	July	1893	By examination.	Des Moines.	Afton.
4392	McDaniel, F. H.	August	1893	By examination.	Swan.	
4391	McCorkle, G. E.	October	1893	By examination.	Shellsburg.	
4400	McGuin, Geo. B.	March	1893	By examination.	Grinnell.	
4483	McCurnin, T. P.	April	1893	By examination.	Des Moines.	
4488	McKown, J. W.	April	1893	By examination.	Cedar Rapids.	
4483	McMartin, C. S.	May	1893	By examination.	Rock Valley.	West Union.
4483	McMeel, E. C.	May	1893	By examination.	Lost Nation.	Delmar.
4459	McMeel, E. C.	May	1893	By examination.	Seymour.	
4469	McMoy, John R.	May	1893	By examination.	Des Moines.	
4468	McKay, Chas. A.	May	1893	By examination.	Boone.	Olin.
4581	McMechan, James	October	1893	By examination.	Cascade.	
4546	McComber, G. B.	November	1893	By examination.	Muscatine.	
4611	McBride, W. H.	March	1894	By examination.	Clare.	Ayrshire.
4687	McElroy, E. K.	April	1894	By examination.	Lost Nation.	
4690	McMeel, J. H.	June	1894	By examination.	Des Moines.	
4697	McConaughy, J. Earl B.	October	1894	By examination.	Vinton.	Marshalltown.
4763	McDonald, J. E.	March	1894	By examination.	Fontanelle.	
4841	McDonald, Pierre.	March	1894	By examination.	Oreston.	Oakalosa.
4873	McCune, Charles H.	April	1894	By examination.	Almworth.	Spirit Lake.
4894	McGrew, E. S.	October	1894	By examination.	Redding.	
4941	McClanahan, W. A.	November	1894	By examination.	LeMars.	
5014	McArthur, Wallace.	March	1895	By examination.	Buffalo Center.	Perry.
5050	McKay, J. H.	April	1895	By examination.	Marble Rock.	Forest City.
5189	McGray, W. R.	January	1897	By examination.	Victor.	Garner.
5191	McMahon, Thomas.	January	1897	By examination.	Emerson.	Sibley.
5246	McGrew, L. W.	July	1897	By examination.	Centerville.	In Colorado.
5380	McCreary, H. B.	September	1897	By examination.	Des Moines.	
5381	McAdams, A. E.	January	1898	By examination.	New Hampton.	Badger.
5392	McMullen, F. A.	February	1898	By examination.	New Market.	Independence.
5407	McCalm, C. W.	April	1898	By examination.	College Springs.	
5448	McClymonds, S. E.	April	1898	By examination.	Jefferson.	Harlan.
5463	McPheters, B. B.	April	1898	By examination.	Webster.	
5476	McLaughlin, W. H.	April	1898	By examination.	Pt. Dodge.	Humboldt.
5505	McNamara, R. H.	June	1898	By examination.	Adair.	
5550	McGroy, M. T.	June	1898	Graduate.	Hartley.	
5567	McCreedy, A. R.	September	1898	By examination.	Lake City.	Mitchell.
5592	McMac, F. G.	November	1898	By examination.	Des Moines.	In Illinois.
5593	McCombs, Amantius	November	1898	By examination.	Monticello.	In Kansas.
5595	McLanghin, C. B.	April	1899	Graduate.	Brooklyn.	
5595	McLanghin, C. B.	May	1899	Graduate.	Des Moines.	
5794	McFadden, William	July	1899	Graduate.	Granger.	
5793	McFadden, William	August	1899	Graduate.	Shler.	
5843	McAfee, Vesta J. A.	September	1899	By examination.	Des Moines.	Early.
5855	McClusky, John A.	November	1899	By examination.	Stout City.	Belmond.
5882	McDonald, Andrew	January	1900	By examination.	Des Moines.	
5947	McCurnin, A.	April	1900	By examination.	Stout City.	Wellsville, Mo.
6043	McFarland, V. Egl.	January	1900	By examination.	Des Moines.	
6062	McKibben, R. G.	August	1900	Graduate.	Van Horn.	
6062	McKibben, R. G.	August	1900	Graduate.	Goodell.	
6102	McGinn, H. Edwin	August	1900	Graduate.		
6102	McGuire, J. Leonard	September	1900	Graduate.		

9303	Nugent, H. D.	May 18, 1898	By examination	Oakesboro	Nevada	In Tennessee.
9304	Norton, Charles F.	February 23, 1897	By examination	Des Moines	Mechanicsville	
9305	Nichols, W. E.	April 6, 1897	By examination	Sheffield	Siox Rapids	
9306	Newbold, R. L.	March 8, 1898	By examination	Center Point	Ackley	
9307	Nordstrum, S. G.	September 8, 1898	By examination	Dayton		
9308	Nix, John M.	November 25, 1898	By examination	Dyersville		
9309	Northrup, A. S.	February 10, 1899	By examination	Lowa City		
9310	Nauaman, E. J.	February 27, 1899	Graduate	Burlington	Dayton	
9311	Nordstrum, J. F.	July 1, 1899	By examination	Stanton	Essex	
9312	Nordstrum, Frederick	September 12, 1899	By examination	Des Moines		
9313	Nauaman, Charles	September 15, 1899	Graduate	Davenport		
9314	Nauder, Frank	October 8, 1899	By examination	Woodward		
9315	Nauaman, W. B.	March 8, 1901	By examination	Des Moines	Guthrie Center	
9316	Nauden, H. R.	March 23, 1901	By examination	Spencer	Webb	
9317	Nelson, C. H.	July 23, 1901	By examination	Merrill		
9318	Ney, Albert	December 13, 1902	By examination	Ackley	Hubbard	
9319	Nice, Henry A.	June 7, 1903	By examination	Siox City		
9320	Nix, Mike	September 22, 1903	By examination	Britt	Corwith	
9321	Nichols, William	September 25, 1903	By examination	Bedford		
9322	Nelson, Charles N.	November 15, 1903	By examination	Humboldt	Forest City	
9323	Nelson, J. D.	March 8, 1904	By examination	Marshalltown	St. Anthony	
9324	Newman, Charles T.	July 18, 1904	By examination	Panora	Des Moines	
9325	Nichols, C. F.	September 13, 1904	By examination	Greco	Stuart	
9326	Noble, Roy O.	August 10, 1905	By examination	Marathon	Fonda	
9327	Norton, N. L.	December 21, 1905	By examination	Rathven	Charles City	
9328	Nolan, G. B.	May 5, 1906	By examination	Danbury	Pearson	
9329	Nicola, F.	May 2, 1906	By examination	Webster City		
9330	Newman, Grace	June 2, 1906	By examination	Stanwood		
9331	Nordhaus, C. A.	August 23, 1906	Graduate	Albany		
9332	Nietert, Wm. G.	October 1, 1906	By examination	Iowa City		
9333	Noyak, Joe H.	December 7, 1906	By examination	Clareton		
9334	Newcomb, Geo. D.	March 8, 1906	Graduate	Blanchard	Modale	
9335	Nixon, Robert B.	March 27, 1906	Graduate	Des Moines		
9336	Nesting, C. O.	July 27, 1906	By examination	Ottumwa		
9337	Nordgren, E. E.	March 7, 1906	Graduate	Pella	Lovilla	
9338	Nordgren, E. J.	March 1, 1906	Graduate	Rockwell	Newton	
9339	Nolan, J. H.	August 5, 1906	Graduate	Aurelia	Perru	
9340	Nelson, Edw. A.	September 5, 1906	By examination	Des Moines		In N. Dakota.
9341	Nelson, John C.	September 5, 1906	By examination	Clinton		
9342	Nyquist, John	December 2, 1906	By examination	Bancroft		In Chicago.
9343	Nemmers, Peter J.	January 7, 1907	By examination	Lansing		
9344	Nachtway, Frank J.	August 4, 1907	By examination	Atlantic		
9345	Nichols, F. J.	February 5, 1907	Graduate	Marcus		
9346	Nafziger, Armand	June 4, 1907	By examination	Sigourney		
9347	Nauur, Geo. T.	July 2, 1907	By examination	Promise City		
9348	Noble, Glenn W.	January 7, 1907	By examination	Lake Mills		
9349	Nerby, Olaf E.	February 4, 1907	By examination	Des Moines		In Wisconsin.
9350	Nolte, S. C. H.	March 4, 1907	Graduate		Burnside.	

ABSTRACT—CONTINUED.

NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
Norton, Guy J.	March 4, 1902	By examination	Alcona.		
Norton, G. O.	April 1, 1902	Graduate	Livermore.	Ft. Dodge.	
Nixon, A. W.	April 1, 1902	Graduate	Lower City.	Nevada.	
Noble, R. A.	June 2, 1902	Graduate	Grafton.		
North, H. E.	August 21, 1902	Graduate	Dubuque.		
Neufeld, Frank	August 21, 1902	Graduate	Davenport.		
Nickel, Arthur	February 8, 1903	Graduate	Des Moines.		In Wisconsin.
Newman, W. L.	February 8, 1903	By examination.	Marshalltown.		In Indiana.
Noble, Chas. W.	February 8, 1903	By examination.	Dallas.		
Nysco, P. N.	March 14, 1903	Graduate	Sioux.		
Nacke, Frank J.	March 17, 1903	By examination	West Point.	Menlo.	
Olney, Arthur R.	June 10, 1900	As owner	Olinton.		
Oeder, Frederick	June 12, 1900	As assistant	Des Moines	St. Charles.	
Olinstead, Earl N.	June 11, 1900	As owner	New Hampton.		
Olmstead, J. S.	July 7, 1900	As owner	Chelsea.	Hartwick.	
Otis, Clarence M.	July 17, 1900	As assistant	Tabor.		
Osborne, Benjamin F.	July 15, 1930	As assistant	Ripley.		
Olson, Olaf M.	December 15, 1890	By examination	Fort Dodge.		
Owen, N. Eugene.	October 4, 1890	By examination	Oaklaosa.		Cameron, Mo.
Oldridge, M. V.	October 4, 1891	By examination	Farley.		
Olve, Edwin A.	November 28, 1891	By examination	Bayard.		
Osborne, G. B.	October 6, 1892	By examination	Riverton.	Seranton.	
Ochiltree, V. B.	April 7, 1895	By examination.	Keokuk.	Missouri Valley.	
Owen, C. N.	June 15, 1895	By examination.	Marion.		
Olson, Conrad J.	December 17, 1895	By examination.	Des Moines.		
Olve, D. O.	June 12, 1898	By examination.	Seranton		Out of business.
Osborne, Ben G.	July 11, 1898	By examination.	Des Moines	Oelwein.	
Ogg, John J.	January 20, 1899	By examination.	Lime Springs		In Missouri.
Overfield, E. E.	February 15, 1899	By examination.	Elma.		
Ott, John R.	February 6, 1900	By examination.	Washington.	Mt. Pleasant.	
O'Reilly, William F.	July 12, 1900	Graduate	Keokuk.		
Owen, Luther P.	November 8, 1890	By examination.	Marion.		
Osborne, E. A.	March 30, 1901	By examination.	Oedar Rapids		
Olinger, William	February 1, 1892	By examination.	Thayer.		
Oxendancer, A. R.	December 6, 1892	By examination.	Grinnell.	Indianola	In Colorado.
Overton, W. T.	May 1, 1895	By examination.	Hampton		In Oklahoma.
Ormsby, F. E.	June 6, 1895	By examination.	Martelle.	Geneva.	

Pentzer, J. L.	April	By examination.	Muscatine	.....	Oskaloosa.
Pickett, John H.	May	By examination.	Iowa City	.....	Rock Valley.
Pickens, H. T.	February	By examination.	Spencer	.....	Shenandoah.
Pierman, H. L.	September	By examination.	Osborne	.....	
Pittman, Charles C.	November	By examination.	Oskaloosa.	.....	
Platt, George M.	November	By examination.	Red Oak.	.....	
Platt, George W.	June	By examination.	North Springs.	.....	Davenport.
Poffinger, Henry J.	February	By examination.	Ida Grove	.....	
Polson, Joseph A.	February	By examination.	Dubuque	.....	Grimnell.
Potter, J. M.	March	By examination.	Gladiolus	.....	Bladestown.
Paul, B. F.	August	By examination.	Paulina	.....	Cedar Falls.
Pfeiffer, H. Jacob.	August	By examination.	Le Mars	.....	
Piechuck, E. A.	August	By examination.	Forest City	.....	Linville.
Pinckney, William	March	By examination.	Parkersburg	.....	Corning.
Poffler, Paul M.	May	By examination.	Shambaugh	.....	
Potter, F. E.	March	By examination.	Shambaugh	.....	
Pratt, Arthur E.	August	By examination.	Sloan	.....	
Phillips, Clyde C.	February	By examination.	West Union.	.....	
Phillips, E. M.	March	By examination.	Olin	.....	(Olin only).
Port, Frank W.	June	By examination.	Yall	.....	Marona.
Paine, Fred E.	July	By examination.	Unionville	.....	Garden Grove.
Potts, Harry W.	September	By examination.	Carroll	.....	London.
Petty, C. G.	April	By examination.	Cedar Falls	.....	
Pfeiffer, G. A.	April	By examination.	Britt	.....	Bloomfield.
Perry, Chas. H.	April	By examination.	Grimnell	.....	
Peck, Herman Z.	July	By examination.	Cedar Rapids	.....	
Pitkin, F. O.	September	By examination.	Cedar Rapids	.....	
Pollins, Charles E.	November	By examination.	Adair	.....	Atlantic.
Parsons, Miss E. S.	March	By examination.	Tracy	.....	
Park, L. E.	May	By examination.	Des Moines.	.....	
Pearson, L. R.	June	By examination.	Des Moines.	.....	Keokuk.
Phelps, C. W.	June	By examination.	Salma	.....	
Pfander, C. F.	August	By examination.	Ackley	.....	Milton.
Pennington, G. S.	December	By examination.	Ottumwa	.....	Asheton, Ill.
Petersmeyer, William	February	By examination.	Odebolt	.....	Winterset.
Peck, Jesse O.	July	By examination.	Russells	.....	
Peck, Joseph B.	November	By examination.	Des Moines	.....	Dallas Center.
Pettit, Lewis N.	December	By examination.	Akron	.....	
Parsons, A. H.	February	By examination.	Montezuma	.....	
Platt, J. H.	February	By examination.	Coin	.....	Tarkio, Mo.
Pennelaker, J. W.	July	By examination.	Cedar Falls	.....	Decorah.
Parman, E. J.	September	By examination.	Sibley	.....	
Parker, C. E.	September	By examination.	Atlantic	.....	Omaha, Neb.
Patterson, Harry O.	November	By examination.	Bloomfield	.....	Cincinnati.
Power, J. H.	March	By examination.	Montezuma	.....	Hawarden.
Platt, Thomas B.	April	By examination.	Moulton	.....	
Powers, E. A.	April	By examination.	Odebolt	.....	Soldier.
Powers, E. A.	May	By examination.	Odebolt	.....	Alvord.
Parsons, Palmer C.	June	By examination.	Kingsley	.....	
Pace, W. P.	June	By examination.	Ireton	.....	

1903]	1902	1901	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870	1869	1868	1867	1866	1865	1864	1863	1862	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	1848	1847	1846	1845	1844	1843	1842	1841	1840	1839	1838	1837	1836	1835	1834	1833	1832	1831	1830	1829	1828	1827	1826	1825	1824	1823	1822	1821	1820	1819	1818	1817	1816	1815	1814	1813	1812	1811	1810	1809	1808	1807	1806	1805	1804	1803	1802	1801	1800	1799	1798	1797	1796	1795	1794	1793	1792	1791	1790	1789	1788	1787	1786	1785	1784	1783	1782	1781	1780	1779	1778	1777	1776	1775	1774	1773	1772	1771	1770	1769	1768	1767	1766	1765	1764	1763	1762	1761	1760	1759	1758	1757	1756	1755	1754	1753	1752	1751	1750	1749	1748	1747	1746	1745	1744	1743	1742	1741	1740	1739	1738	1737	1736	1735	1734	1733	1732	1731	1730	1729	1728	1727	1726	1725	1724	1723	1722	1721	1720	1719	1718	1717	1716	1715	1714	1713	1712	1711	1710	1709	1708	1707	1706	1705	1704	1703	1702	1701	1700	1699	1698	1697	1696	1695	1694	1693	1692	1691	1690	1689	1688	1687	1686	1685	1684	1683	1682	1681	1680	1679	1678	1677	1676	1675	1674	1673	1672	1671	1670	1669	1668	1667	1666	1665	1664	1663	1662	1661	1660	1659	1658	1657	1656	1655	1654	1653	1652	1651	1650	1649	1648	1647	1646	1645	1644	1643	1642	1641	1640	1639	1638	1637	1636	1635	1634	1633	1632	1631	1630	1629	1628	1627	1626	1625	1624	1623	1622	1621	1620	1619	1618	1617	1616	1615	1614	1613	1612	1611	1610	1609	1608	1607	1606	1605	1604	1603	1602	1601	1600	1599	1598	1597	1596	1595	1594	1593	1592	1591	1590	1589	1588	1587	1586	1585	1584	1583	1582	1581	1580	1579	1578	1577	1576	1575	1574	1573	1572	1571	1570	1569	1568	1567	1566	1565	1564	1563	1562	1561	1560	1559	1558	1557	1556	1555	1554	1553	1552	1551	1550	1549	1548	1547	1546	1545	1544	1543	1542	1541	1540	1539	1538	1537	1536	1535	1534	1533	1532	1531	1530	1529	1528	1527	1526	1525	1524	1523	1522	1521	1520	1519	1518	1517	1516	1515	1514	1513	1512	1511	1510	1509	1508	1507	1506	1505	1504	1503	1502	1501	1500	1499	1498	1497	1496	1495	1494	1493	1492	1491	1490	1489	1488	1487	1486	1485	1484	1483	1482	1481	1480	1479	1478	1477	1476	1475	1474	1473	1472	1471	1470	1469	1468	1467	1466	1465	1464	1463	1462	1461	1460	1459	1458	1457	1456	1455	1454	1453	1452	1451	1450	1449	1448	1447	1446	1445	1444	1443	1442	1441	1440	1439	1438	1437	1436	1435	1434	1433	1432	1431	1430	1429	1428	1427	1426	1425	1424	1423	1422	1421	1420	1419	1418	1417	1416	1415	1414	1413	1412	1411	1410	1409	1408	1407	1406	1405	1404	1403	1402	1401	1400	1399	1398	1397	1396	1395	1394	1393	1392	1391	1390	1389	1388	1387	1386	1385	1384	1383	1382	1381	1380	1379	1378	1377	1376	1375	1374	1373	1372	1371	1370	1369	1368	1367	1366	1365	1364	1363	1362	1361	1360	1359	1358	1357	1356	1355	1354	1353	1352	1351	1350	1349	1348	1347	1346	1345	1344	1343	1342	1341	1340	1339	1338	1337	1336	1335	1334	1333	1332	1331	1330	1329	1328	1327	1326	1325	1324	1323	1322	1321	1320	1319	1318	1317	1316	1315	1314	1313	1312	1311	1310	1309	1308	1307	1306	1305	1304	1303	1302	1301	1300	1299	1298	1297	1296	1295	1294	1293	1292	1291	1290	1289	1288	1287	1286	1285	1284	1283	1282	1281	1280	1279	1278	1277	1276	1275	1274	1273	1272	1271	1270	1269	1268	1267	1266	1265	1264	1263	1262	1261	1260	1259	1258	1257	1256	1255	1254	1253	1252	1251	1250	1249	1248	1247	1246	1245	1244	1243	1242	1241	1240	1239	1238	1237	1236	1235	1234	1233	1232	1231	1230	1229	1228	1227	1226	1225	1224	1223	1222	1221	1220	1219	1218	1217	1216	1215	1214	1213	1212	1211	1210	1209	1208	1207	1206	1205	1204	1203	1202	1201	1200	1199	1198	1197	1196	1195	1194	1193	1192	1191	1190	1189	1188	1187	1186	1185	1184	1183	1182	1181	1180	1179	1178	1177	1176	1175	1174	1173	1172	1171	1170	1169	1168	1167	1166	1165	1164	1163	1162	1161	1160	1159	1158	1157	1156	1155	1154	1153	1152	1151	1150	1149	1148	1147	1146	1145	1144	1143	1142	1141	1140	1139	1138	1137	1136	1135	1134	1133	1132	1131	1130	1129	1128	1127	1126	1125	1124	1123	1122	1121	1120	1119	1118	1117	1116	1115	1114	1113	1112	1111	1110	1109	1108	1107	1106	1105	1104	1103	1102	1101	1100	1099	1098	1097	1096	1095	1094	1093	1092	1091	1090	1089	1088	1087	1086	1085	1084	1083	1082	1081	1080	1079	1078	1077	1076	1075	1074	1073	1072	1071	1070	1069	1068	1067	1066	1065	1064	1063	1062	1061	1060	1059	1058	1057	1056	1055	1054	1053	1052	1051	1050	1049	1048	1047	1046	1045	1044	1043	1042	1041	1040	1039	1038	1037	1036	1035	1034	1033	1032	1031	1030	1029	1028	1027	1026	1025	1024	1023	1022	1021	1020	1019	1018	1017	1016	1015	1014	1013	1012	1011	1010	1009	1008	1007	1006	1005	1004	1003	1002	1001	1000	999	998	997	996	995	994	993	992	991	990	989	988	987	986	985	984	983	982	981	980	979	978	977	976	975	974	973	972	971	970	969	968	967	966	965	964	963	962	961	960	959	958	957	956	955	954	953	952	951	950	949	948	947	946	945	944	943	942	941	940	939	938	937	936	935	934	933	932	931	930	929	928	927	926	925	924	923	922	921	920	919	918	917	916	915	914	913	912	911	910	909	908	907	906	905	904	903	902	901	900	899	898	897	896	895	894	893	892	891	890	889	888	887	886	885	884	883	882	881	880	879	878	877	876	875	874	873	872	871	870	869	868	867	866	865	864	863	862	861	860	859	858	857	856	855	854	853	852	851	850	849	848	847	846	845	844	843	842	841	840	839	838	837	836	835	834	833	832	831	830	829	828	827	826	825	824	823	822	821	820	819	818	817	816	815	814	813	812	811	810	809	808	807	806	805	804	803	802	801	800	799	798	797	796	795	794	793	792	791	790	789	788	787	786	785	784	783	782	781	780	779	778	777	776	775	774	773	772	771	770	769	768	767	766	765	764	763	762	761	760	759	758	757	756	755	754	753	752	751	750	749	748	747	746	745	744	743	742	741	740	739	738	737	736	735	734	733	732	731	730	729	728	727	726	725	724	723	722	721	720	719	718	717	716	715	714	713	712	711	710	709	708	707	706	705	704	703	702	701	700	699	698	697	696	695	694	693	692	691	690	689	688	687	686	685	684	683	682	681	680	679	678	677	676	675	674	673	672	671	670	669	668	667	666	665	664	663	662	661	660	659	658	657	656	655	654	653	652	651	650	649	648	647	646	645	644	643	642	641	640	639	638	637	636	635	634	633	632	631	630	629	628	627	626	625	624	623	622	621	620	619	618	617	616	615	614	613	612	611	610	609	608	607	606	605	604	603	602	601	600	599	598	597	596	595	594	593	592	591	590	589	588	587	586	585	584	583	582	581	580	579	578	577	576	575	574	573	572	571	570	569	568	567	566	565	564	563	562	561	560	559	558	557	556	555	554	553	552	551	550	549	548	547	546	545	544	543	542	541	540	539	538	537	536	535	534	533	532	531	530	529	528	527	526	525	524	523	522	521	520	519	518	517	516	515	514	513	512	511	510	509	508	507	506	505	504	503	502	501	500	499	498	497	496	495	494	493	492	491	490	489	488	487	486
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ABSTRACT—CONTINUED.

Number of cert. filiate.	NAME.	DATE OF REGISTRA- TION.	HOW REGISTERED.	PLACE OF REGISTRA- TION.	LATEST REPORTED ADDRESS.	REMARKS.
1376	Rhoads, H. B.	July 14, 1890	As owner	Bedford		
1419	Rice, Charles	July 18, 1890	Assistant	Smithland.		
1441	Reid, Charles	July 18, 1890	Assistant	Smithland.		
1531	Riggs, William K.	July 17, 1890	As owner	Keokuk.		
1723	Ross, Julius G.	September 14, 1890	As owner	Keokuk.		
1862	Rud, Charles C.	October 18, 1890	By examination	Sabat.		
1873	Runk, J. B.	October 25, 1890	By examination	Albion	Clinton.	
1885	Riepe, A. C. H. E.	August 28, 1890	By examination	Davenport.		
1904	Robinson, H. A.	July 30, 1890	By examination	Orford.		
1907	Reel, Z. T.	December 25, 1890	By examination	Des Moines.	Oakalosa.	In California.
2002	Rhoads, John	December 28, 1890	By examination	Fayette.		
2086	Reel, A. B.	April 28, 1891	By examination	Des Moines.	Oakalosa.	
2299	Ray, H. G.	December 20, 1891	By examination	Des Moines.	Des Moines.	
2336	Richardson, G. A.	February 8, 1892	By examination	Blairtown.	Demson.	
2337	Riley, F. M.	February 8, 1892	By examination	Jefferson.		
2355	Randall, Charles T.	February 27, 1892	By examination	Dunlap	Des Moines.	Out of business.
2380	Ryan, J. R.	March 24, 1892	By examination	Colfax.		
2387	Rockwell, R. B.	April 4, 1892	By examination	Bedford.		
2393	Robbins, C. A.	September 14, 1892	By examination	Waukon.		
2543	Robinson, D. D.	October 19, 1893	By examination	Waukon.	Codin.	
2572	Richardson, J. F.	March 10, 1893	By examination	Mt. Pleasant.	Earlington.	
2707	Royce, Charles S.	March 12, 1893	By examination	Harper.	Keota.	
2785	Robinson, Ed. H.	December 19, 1893	By examination	Oakland.	Malvern.	
2741	Regan, Edwin W.	April 14, 1894	By examination	Burlington.		
2846	Randolph, Frank	April 18, 1894	By examination	Nevinsville.		
2876	Rice, John A.	March 8, 1895	By examination	Des Moines.		In Illinois.
2928	Ruff, Oscar	March 8, 1895	By examination	Milton.		
2928	Ramsay, J. N.	October 1, 1895	Graduate	Dubuque		
2951	Rickett, F. W.	December 1, 1895	By examination	Keota	Sioux City.	Out of business.
3156	Reynolds, M. M.	June 1, 1896	By examination	Casey	Cedar Rapids.	In Nebraska.
3247	Reed, C. W.	February 1, 1897	By examination	Panora		
3277	Ryan, James B.	April 20, 1897	By examination	Steamboat Rock	Woodbine.	
3242	Rainburg, A. P.	May 21, 1897	By examination	Dunlap	Winthrop.	
3248	Roff, H. J.	May 17, 1897	By examination	Brooklyn.		
3246	Roberts, F. J.	June 17, 1897	By examination	Lyons.		
3284	Riggs, J. A.	October 1, 1897	By examination	Ute	Westgate	
3287	Raymond, William P.	October 4, 1897	By examination	Parkersburg.	Audubon	
				Waukon	Nashua	

8397	Rees, L. A.	October	By examination.	Des Moines	Hamburg	In Illinois.
8398	Riddle, N. D.	November	By examination.	Atalissa	Prairie City.	
8399	Rudert, Otto	September	By examination.	Davenport		
8400	Rogers, Eugene E.	October	By examination.	Des Moines		
8401	Rove, E. E.	December	By examination.	Early.		
8402	Rose, Charles K.	January	By examination.	Tipton.	Clear Lake.	
8403	Robinson, C. E.	February	By examination.	Sibley	Springville.	
8404	Rogers, R. R.	March	By examination.	Correctionville		
8405	Richmond, E. C.	July	By examination.	Riceville.		
8406	Ruse, A. E.	November	By examination.	Humboldt.		
8407	Ryan, Milo	January	By examination.	Vall.		
8408	Ryuse, H.	February	By examination.	Mt. Pleasant.	Steamboat Rock.	In Missouri.
8409	Reed, John D.	April	By examination.	Woodbine.	New Sharon.	
8410	Ream, R.	April	By examination.	Iowa City		
8411	Roe, Charles P.	July	By examination.	Grinnell.	Keota.	
8412	Robertis, William G.	December	By examination.	Payette.	Rockwell City.	
8413	Reibert, Caspar	February	By examination.	Algona.	Ottumwa.	
8414	Rathbun, D. C.	February	By examination.	Mitchellville.	Des Moines.	
8415	Ritz, George	March	By examination.	Cushing.	Washita.	
8416	Robinson, A. J.	April	By examination.	Greeley.	Edgewood.	In Minnesota.
8417	Reichard, W. F.	June	By examination.	Keosauqua.		
8418	Rogers, U. C.	August	By examination.	West Point.		
8419	Royden, F. W.	September	By examination.	Dubuque.		
8420	Reynolds, M. H.	January	By examination.	Rockwell		
8421	Richard, Miss L.	March	By examination.	Beranton		
8422	Ruete, Otto M.	May	By examination.	Indianola		
8423	Rogers, Thomas	May	By examination.	Ferguson.	Lacoma.	In Wisconsin.
8424	Ralston, S. A.	June	By examination.	Ottumwa.	Stuart.	In Nebraska.
8425	Readout, Albert	July	By examination.	Neola.	Woodbine.	
8426	Reynolds, A. L.	July	By examination.	New Market.		
8427	Robbins, F.	October	By examination.	Stuart.		
8428	Roberts, O. B.	December	By examination.	Lake Park.		
8429	Reber, A. S.	January	By examination.	Diagonal.		
8430	Rohlf, Edwin L.	March	By examination.	Ottumwa.		
8431	Reed, H. W. C.	March	By examination.	Des Moines.	Neola.	
8432	Russell, Charles B.	March	By examination.	Des Moines.	Laurens.	
8433	Ralls, Herman	May	Graduate.	Des Moines.	Cedar Rapids.	
8434	Reed, Charles G.	May	Graduate.	Tama.		
8435	Reed, A. H.	July	By examination.	Des Moines.		
8436	Ryan, C. D.	February	By examination.	Glenwood.		
8437	Reinbo, John H.	March	By examination.	Brooklyn.		
8438	Reinburg, C. T.	June	By examination.	Clinton.		
8439	Reinhard, R. B.	August	By examination.	Sumner.		
8440	Robinson, R. A.	September	By examination.	Tipton.		
8441	Robertson, J. I.	September	By examination.	Columbus Junction.		
8442	Robertson, Samuel	September	By examination.	Creston.		
8443	Rernold, John W.	September	By examination.	Yefor.		
8444	Rose, N. K.	November	By examination.	Lake City.		
8445	Russell, Fred.	January	By examination.		Rockwell City.	

ABSTRACT—CONTINUED.

Number of certificates	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
4102	Ripley, J. H.	January 22, 1896	By examination.	Pierson	Kingsley.	
4833	Richey, E. F.	May 7, 1896	By examination.	Lohrville	Summers.	
4891	Roberts, Joseph.	May 9, 1896	By examination.	Linn Grove.		
4917	Roe, Carl O.	August 9, 1896	By examination.	Waukon.	Britt.	
4987	Riddle, C. H.	September 10, 1896	By examination.	Prairie City.		
4988	Kedman, I. D.	January 7, 1896	By examination.	Henderson.	Pacific Junction.	
5021	Kelner, Henry	March 3, 1896	By examination.	South English.	Keota.	
5043	Rouse, C. O.	April 7, 1896	By examination.	Mt. Pleasant.	Glenwood.	
5049	Rogers, Arthur L.	June 2, 1896	By examination.	Des Moines	Murray.	In Missouri.
5200	Rodamar, Albert	February 2, 1897	By examination.	Waterloo.		
5219	Rogatz, George, Jr.	March 2, 1897	By examination.	Dubuque.		
5220	Roberts, F. H.	March 2, 1897	By examination.	Kossauqua.		
5223	Rosemond, W. H.	March 2, 1897	By examination.	Clear Lake.	Stratford.	
5233	Ruegnitz, Fred.	March 5, 1897	By examination.	Elkader		
5251	Roebuck, E. E.	April 6, 1897	By examination.	Waterloo.	Ocon Rapids.	
5261	Royer, J. D.	May 4, 1897	By examination.	Hampton	Popejoy.	
5271	Romanke, Ernest	May 4, 1897	By examination.	Grinnell.		
5272	Richards, W. W.	May 4, 1897	By examination.	Cedar Rapids.	Grundy Center.	
5301	Rhea, W. F.	May 4, 1897	Graduate	Odebolt.		
5387	Roth, C. P.	August 2, 1897	By examination.	Dyersville.		
5394	Rust, E. G.	November 2, 1897	By examination.	Pringhar.		
5399	Remington, C. E.	December 7, 1897	By examination.	Bedford	North English.	
5404	Robinson, C. E.	March 1, 1898	By examination.	Forest City.		
5442	Rogers, A. M.	March 5, 1898	By examination.	Dana	Paton.	
5444	Reed, N. F.	April 5, 1898	By examination.	Elkora	Ottumwa.	
5463	Rodgers, J. G.	April 5, 1898	By examination.	Montezuma.	Deep River.	
5473	Ross, J. A. C. W.	April 5, 1898	By examination.	Marathon	Pocahontas.	
5479	Robinson, J.	April 5, 1898	By examination.	Davis City.		
5490	Roche, W. H.	April 5, 1898	By examination.	Riceville.	Steamboat Rock.	
5518	Reed, C. W.	June 5, 1898	By examination.	Fortmouth		
5533	Ruegnitz, E. A.	August 4, 1898	Graduate	Dubuque.	Randall.	
5550	Ramsay, R. E.	August 4, 1898	By examination.	Marble Rock	Keosauqua.	
5561	Rogers, R. E.	March 1, 1899	By examination.	Wesley	Keosauqua.	
5793	Reynolds, Albert E.	September 1, 1899	Graduate	Ottumwa.	Keosauqua.	
5823	Ryan, Thos. O.	September 1, 1899	Graduate	Marysville	Daugherty.	
5824	Renard, Thos. O.	September 5, 1899	Graduate	Des Moines		In Indiana.
5896	Reimers, William F.	November 5, 1899	Graduate	Beauregard	Whitemore.	

5299	Rodemeyer, F. H.	November	9, 1900	Graduate's	Hampton	Latimer.	In Colorado.
5300	Rool, Don.	January	2, 1900	By examination.	Freemont	Fairfield.	
5301	Raessler, Vester D.	January	9, 1900	By examination.	Anthon.		
5302	Rettemaler, Frank J.	February	6, 1900	Graduate	Carroll.		
5303	Rofis, Herman O.	March	6, 1900	Graduate	Davenport	New York, N. Y.	
5304	Rafly, Leland D. G.	June	6, 1900	Graduate	Sioux City	Victor.	
5305	Ratliff, Francis O.	June	5, 1900	Graduate	Des Moines	Dubuque.	
5306	Rust, R. R.	June	5, 1900	By examination.	Grinnell		
5307	Richman, Fred H.	June	5, 1900	By examination.	Etherville.		
5308	Rankin, Roy R.	December	4, 1900	By examination.	Allerton.		In Illinois.
5309	Ryan, James H.	December	4, 1900	By examination.	Des Moines.		
5310	Romer, Herman	February	5, 1901	Graduate	Dubuque		
5311	Rettemaler, Joseph F.	February	5, 1901	Graduate	Carroll		
5312	Ryerson, Earl	April	2, 1901	By examination.	Bradyville	Conway.	
5313	Richardson, Guy L.	June	7, 1901	By examination.	Lewis.		
5314	Reel, Geo. W.	September	7, 1901	Graduate	Des Moines	Ether ville.	
5315	Roberts, E. W.	August	3, 1901	By examination.	Oakaloes.	Albia.	
5316	Roberts, Ralph P.	September	3, 1901	Graduate	Sidney	Bedford.	
5317	Ronsnar, J. C.	October	1, 1901	By examination.	Audubon.		
5318	Reppert, Gus	October	1, 1901	Graduate	Clutter	Belle Plaine.	
5319	Redlman, J. P.	October	1, 1901	By examination.	Meservey	Battle Creek.	
5320	Rice, Louis J.	December	3, 1901	Graduate	Hampton.	Latimer.	
5321	Rice, Carl B.	January	7, 1902	By examination.	Marshalltown.		
5322	Reidner, T. E.	January	7, 1902	By examination.	Coffax.		In Indiana.
5323	Reed, Ethel	February	4, 1902	Graduate	Davenport		In Washington.
5324	Ragatz, F. J.	February	4, 1902	By examination.	Victor.		
5325	Rowland, W. J.	April	22, 1902	Graduate	Dubuque.		
5326	Rickert, W. M.	April	1, 1902	By examination.	Waterloo.	Fayette.	
5327	Rider, Geo. H.	June	20, 1902	Graduate	Des Moines.	South Dakota.	
5328	Rochie, Jos. L.	June	20, 1902	Graduate	Belfast		In Illinois.
5329	Rhoden, R. H.	July	8, 1902	Graduate	Cascade.		
5330	Rolling, John Jr.	August	8, 1902	By examination.	Modale.		In Maryland.
5331	Rolling, John Jr.	August	8, 1902	Graduate	Bellevue.		
5332	Richards, W. A.	August	5, 1902	By examination.	Bristow.		
5333	Robinson, S. L.	October	7, 1902	Graduate	Des Moines		
5334	Reynolds, Chas. E.	October	7, 1902	By examination.	Des Moines.		
5335	Rice, J. H.	December	2, 1902	Graduate	Des Moines.		
5336	Roth, Henry E.	December	2, 1902	By examination.	Dyersville.		
5337	Rupp, Harry E.	February	3, 1903	Graduate	Dumont	Sigourney.	
5338	Runkel, Julia.	February	3, 1903	Graduate	Des Moines	Norwalk.	
5339	Rice, Thomas E.	February	3, 1903	Graduate	Des Moines		In Illinois.
5340	Rice, Thomas E.	February	3, 1903	Graduate	Menlo.		
5341	Rice, Thomas E.	February	3, 1903	Graduate	Des Moines.		In Illinois.
5342	Rasch, C. A.	February	3, 1903	Graduate	Des Moines.		Out of business.
5343	Sherman, J. M.	June	4, 1900	AS OWDER	Paton	Renwick	
5344	Shatterthwaite, J. W.	June	4, 1900	AS OWDER	Mt. Pleasant.		
5345	Shannon, M. M.	June	11, 1900	AS OWDER	Burlington.		
5346	Shanks, F. B.	June	12, 1900	AS OWDER	West Mitchell		
5347	Smith, W. H.	June	12, 1900	AS OWDER	Shell Rock.	Red Oak.	
5348	Skinner, William B.	June	10, 1900	AS ASSISTANT	Anamosa.		
5349	Skinner, Mary A.	June	10, 1900	AS ASSISTANT	Anamosa.		

ABSTRACT--CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
386	Smith, George E.	June 2, 1880	As owner	Clarence.	West Union.	
387	Smith, Arthur P.	June 18, 1880	As owner	Calmar		
388	Schlegel, Gustave	June 8, 1880	As owner	Davenport.		
447	Stanley, J. G.	June 8, 1880	As owner	Dexter.		
456	Satterlee, Dwight	June 9, 1880	As owner	Dunlap.		
466	Satterlee, E. S.	June 9, 1880	As assistant	Dunlap.		
475	Snyder, O. H.	June 8, 1880	As owner	Malvern	Tabor.	
501	Snyder, James T.	June 8, 1880	As owner	Norway.		
513	Spranger, William S.	June 4, 1880	As owner	Corrydon.		
523	Sproat, William S.	June 10, 1880	As owner	Emerson.		
554	Shipman, R. M.	June 21, 1880	As owner	Independence.		
651	Smale, George	June 8, 1880	As owner	Keosauqua.		
661	Stickling, Joseph C.	June 8, 1880	As assistant	Iowa City		
680	Strader, W. E.	June 28, 1880	As owner	East Des Moines.		
721	Stephenson, A. C.	June 16, 1880	As assistant	Fort Madison.		
734	Stempel, A. H.	July 1, 1880	As owner	Lyons.		
783	Snyder, Daniel B.	June 2, 1880	As owner	Missouri Valley.		
823	Shiley, George P.	June 7, 1880	As owner	Milton.		
889	Summers, L. F.	June 17, 1880	As owner	Manchester.		
919	Smith, Henry C.	June 23, 1880	As assistant	Kellogg.		
975	Smith, John R.	June 9, 1880	As owner	Postville.		
1067	Steedt, Anton	June 9, 1880	As owner	Postville.		
1068	Steadt, Godfrey	June 9, 1880	As owner	Russell.		
1084	Sprague, J. F.	June 28, 1880	As owner	Burlington.		
1100	Stafer, J. A.	June 8, 1880	As owner	Charlton.		
1119	Storie, D. Q.	July 1, 1880	As owner	Des Moines.		
1123	Schroeder, Frederick	July 17, 1880	As assistant	Des Moines.		
1129	Schroeder, John A.	July 10, 1880	As assistant	Fontanelle.		
1141	Scott, Calvin B.	June 30, 1880	As owner	Toledo.		
1249	Stiger, Stephen	June 4, 1880	As owner	Tama City.		
1253	Soleman, Henry	June 18, 1880	As owner	Mt. Etna.		
1476	Sweet, Homer L.	July 17, 1880	As owner	Fort Madison.		
1548	Salmon, Theodore	July 10, 1880	As assistant	Lenox.		
1635	Sergers, J. P.	August 16, 1880	As owner	Mondamin	Magnolia.	
1663	Stuart, James D.	July 30, 1880	By examination	Des Moines.		
1686	Somers, Webb	August 2, 1880	As owner	Des Moines.		
1713	Schmucker, D. R.	August 30, 1880	As owner	Ottumwa.		
1750	Scott, E. M. B.	July 30, 1880	As owner			

Out of business.

ABSTRACT—CONTINUED.

NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
2876 Sherman, Emory	March 16, 1886	By examination.	Alden	Independence	Out of business.
3002 Smith, David F.	4, 1886	By examination.	Wellman	Centerville	Out of business.
3014 Somers, John W.	June 15, 1886	By examination.	Ida Grove		
3042 Scherling, Gust.	August 18, 1886	Graduate	Stoux City		
3044 Sampson, F. W.	August 30, 1886	Graduate	Ceage		
3053 Stevens, W. B.	July 27, 1886	By examination.	Sibley		
3105 Stewart, J. H.	December 7, 1886	By examination.	Washington		
3125 Selby, S. D.	February 8, 1887	By examination.	Carbon	Odebolt	
3126 Stemple, G. L.	March 9, 1887	By examination.	Macedonia		
3137 Stusher, J. M.	February 9, 1887	By examination.	Hudson		
3143 Snelson, William	March 1, 1887	By examination.	Masena		
3151 Slater, Willis O.	March 9, 1887	By examination.	Marengo		In Indiana.
3176 Scott, James C.	March 23, 1887	By examination.	Glidden		
3205 Severa, W. F.	April 4, 1887	By examination.	Cedar Rapids		
3217 Springer, George L.	April 8, 1887	By examination.	Garwin		
3230 Sturges, Will E.	May 17, 1887	By examination.	Carroll	Marion	
3236 Schminke, F. C. H.	May 17, 1887	By examination.	Dubuque		
3252 Schmidt, W. F.	May 31, 1887	By examination.	Stoux City	Quimby	
3274 Shaul, Albert J.	July 5, 1887	By examination.	Kewick		In Minnesota.
3296 Smith, Henry	August 16, 1887	By examination.	New Sharon		
3301 Sedwick, W. L.	August 31, 1887	Graduate	Stoux City		Out of business.
3315 Smith, Fred J.	September 8, 1887	By examination.	Alton	Pocahontas	
3320 Starr, John W.	September 20, 1887	By examination.	Fairfield	Washington	
3333 Stewart, Charles W.	December 6, 1887	By examination.	Crawfordsville		In Michigan.
3363 Smith, Albert E.	January 25, 1888	By examination.	Ocheyedan		
3370 Sturges, N. F.	January 30, 1888	By examination.	Carroll	Des Moines	
3382 Stewart, David T.	February 21, 1888	By examination.	Hartley		
3397 Stevens, John L.	February 2, 1888	By examination.	Iowa City		
3428 Stoll, W. W. Clay	April 10, 1888	By examination.	Arcadia		
3433 Sanford, J. W.	April 17, 1888	By examination.	Falle Plaine	Fontanelle	In Washington.
3443 Schultz, Louis C.	April 19, 1888	By examination.	McGregor	Chicago, Ill.	
3453 Sandell, C. A.	May 23, 1888	By examination.	Keosauqua	Boone	In N. Dakota.
3463 Satterlee, Gale	May 26, 1888	By examination.	Keosauqua		
3473 Striegel, Bernard	September 18, 1888	By examination.	Waterloo	Waterloo	
3484 Sargent, W. L.	September 18, 1888	By examination.	Vitumwa		
3490 Snelson, Leta	October 6, 1888	By examination.	Masena	Fontanelle	
3493 Snelson, Frank E.	November 14, 1888	By examination.	Walnut	Council Bluffs	

3558	Sturgeon, Q. A.	December	4, 1893	By examination.	Medrid.	Havelock.	In Utah.
3577	Sheldon, J. B.	January	7, 1893	By examination.	Beaman.	Eagle Grove.	
3591	Smith, Albert C.	February	19, 1893	By examination.	Marshalltown.	Winterset.	
3597	Smith, M. E.	May	23, 1893	By examination.	Des Moines.		
3598	Setling, Ed H.	June	13, 1893	By examination.	Boone.		
3744	Stewart, Mrs. E. A.	October	1, 1893	By examination.	Red Oak.		
3755	Stewart, Harry W.	October	15, 1893	By examination.	Eagle Grove.		
3765	Smallpage, J. B.	November	9, 1893	Graduate.	Keokuk.		
3766	Schmidt, J. E.	November	19, 1893	By examination.	Toledo.	Mason City.	
3798	Spoehr, A. G.	January	7, 1890	By examination.	Cherokee.		
3808	Schuster, H. J.	January	24, 1890	By examination.	Lowa City.		
3815	Schneider, Otto C.	February	31, 1890	By examination.	Vinton.	Marshalltown.	
3833	Seeley, Charles C.	February	27, 1890	By examination.	Chester Center.	Storm Lake.	
3849	Skiff, William C.	April	1, 1890	By examination.	Minden.	Griswold.	
3891	Schlichting, E. A.	May	8, 1890	By examination.	Dallas Center.	Algona.	
3848	Studley, William J.	June	9, 1890	By examination.	Des Moines.		In Washington.
3905	Sheldon, Frank	July	12, 1890	By examination.	Adel.	Casey.	
3910	Shaffer, O. W.	July	15, 1890	By examination.	Odebolt.		
3927	Smith, Clold H.	September	2, 1890	By examination.	Sumner.		
3929	Stafford, R. H.	September	2, 1890	By examination.	Conesville.	Laurel.	
3933	Smith, M. R.	September	4, 1890	By examination.	Anthony.	Cleghorn.	
3965	Shaw, Michael J.	December	2, 1890	By examination.	Altoona.	Des Moines.	
3967	Shaffer, W. B.	December	2, 1890	By examination.	Ames.		
3976	Summers, George T.	January	19, 1891	By examination.	Des Moines.		In Oregon.
3975	Shope, Charles C.	February	14, 1891	By examination.	Battle Creek.	In Nebraska.	
3992	Smith, William C.	March	7, 1891	By examination.	Marathon.	Swca City.	
4008	Stone, N. E.	April	7, 1891	By examination.	Leon.		
4048	Shumway, Harry	May	5, 1891	By examination.	Des Moines.		In S. Dak.
4075	Stroud, J. S.	June	9, 1891	By examination.	Tabor.		
4076	Swatman, B. F.	June	9, 1891	By examination.	Cassata.	Nemaha.	
4079	Surface, David U.	June	13, 1891	By examination.	Centerville.		
4102	Shaw, William S.	August	13, 1891	Graduate.	Adel.	Earlham.	
4104	Scott, Walter E.	August	23, 1891	By examination.	Earling.	Templeton.	
4109	Smith, J. E.	August	23, 1891	By examination.	Le Mars.		
4127	Strunk, H. J.	October	10, 1891	By examination.	Sioux City.	Tama.	
4141	Sartori, Anton	November	13, 1891	By examination.	Central City.		
4153	Samuelson, J. A.	December	13, 1891	By examination.	Marshalltown.		
4161	Shakespeare, Geo	January	5, 1892	By examination.	Pt. Madison.		
4162	Stone, Charles F. M.	January	5, 1892	By examination.	Washington.	Des Moines.	
4166	Schafer, R. R.	February	2, 1892	By examination.	Anamosa.		
4172	Sherman, D. D.	February	2, 1892	By examination.	Rockwell City.		
4178	Sigworth, D. B.	February	2, 1892	By examination.	Oakland.		
4213	Sherman, M. E.	April	13, 1892	By examination.	Woolstock.		
4218	Swarm, C. P.	May	13, 1892	By examination.	Columbus Junction.		
4266	Smith, J. C.	May	18, 1892	By examination.	Minburn.		
4267	Salmon, G. A.	June	14, 1892	By examination.	Peoria, Ill.		
4297	Sedler, William A.	June	21, 1892	Graduate.	Corning.	St. Charles, Mo.	
4290	Singer, William A.	June	21, 1892	By examination.	Des Moines.		Out of business.
4293	Shinn, Amos F.	July	5, 1892	By examination.			
4295	Smith, R. H.	July	5, 1892	By examination.			

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
4297	Sands, F. G.	July	By examination.	Ainsworth.		
4298	Sullivan, E. F.	August	Graduate.	Des Moines.	Afton.	
4299	Boetje, O. H.	August	By examination.	Monticello.		
4301	Scrimgeour, J. C. A.	September	By examination.	Belle Plaine.	Montour.	In Illinois.
4304	Swenson, J. H. L.	September	By examination.	Mason City.		In Kansas.
4309	Sharnbaugh, L. D.	September	Graduate.	Elkport.		
4315	Seyfert, H. L.	October	By examination.	Arcadia.	Valley Junction.	
4331	Stephenson, C. C.	November	Graduate.	Centerville.		
4348	Samson, C. H.	December	By examination.	Dubuque.		
4395	Shaffer, J. F.	January	By examination.	Cass.		
4397	Shannon, E. S.	January	By examination.	Bayard.	Jamaica.	
4398	Stewers, A. C.	January	Graduate.	Decorah.	Trass.	
4406	Swift, Theo. T.	May	By examination.	Marshalltown.	State Center.	
4411	Stinsons, A. B.	March	By examination.	Sidney.	Hamburg.	
4417	Swenson, S. N.	March	By examination.	Fonda.	Superior.	
4420	Shomler, C. E.	March	By examination.	Shellsburg.	Cedar Rapids.	
4428	Snyder, R. B.	April	By examination.	Keosauqua.	New London.	
4437	Smart, F. G.	April	By examination.	Hancock.		
4450	Shumaker, C. M.	May	Graduate.	Manning.	Lausang.	
4457	Swan, A. B.	May	By examination.	Walker.		
4460	Schwengel, William.	May	By examination.	Jolley.		In Illinois.
4464	Salm, John L.	May	Graduate.	Dubuque.		
4476	Schultz, Otto W.	June	By examination.	Williams.		
4514	Shriner, Frank S.	September	By examination.	Fairfield.		
4518	Shuey, James F.	September	By examination.	Jefferson.		
4527	Schroeder, Frank.	October	By examination.	Atlantic.	Council Bluffs.	
4530	Sells, Frank W.	October	By examination.	Murray.	Jefferson.	
4536	Skillecom, W. M.	October	By examination.	Glenwood.		
4541	Smale, Herbert T.	November	By examination.	Kingsley.	Sac City.	In Nebraska.
4553	Schritzer, Charles A.	December	By examination.	Moravia.	Sigourney.	
4564	Sandberg, Lewis A.	December	By examination.	Stanton.	Knowlton.	
4590	Swallow, George.	December	By examination.	Des Moines.		
4577	Swallow, R. R.	February	By examination.	Hubbard.		
4581	Swallow, William C.	February	By examination.	Waterloo.	Trass.	
4583	Sloan, A. G.	April	By examination.	Le Mars.	Alton.	In Idaho.
4589	Stevan, H.	April	By examination.	Earville.		
4593	Sutter, Joseph R.	June	By examination.	Burlington.		

4662	Stockwell, C. W.	June	1894	By examination	Barcroft	Armstrong.	In Wisconsin.
4663	Sargent, Frank L.	June	1894	By examination	Mayon	Des Moines.	
4672	Spates, S. Walter	June	1894	By examination	Le Mars.		
4673	Schoon, J. Walter	June	1894	By examination	Remond		
4674	Steenish, Frank R.	June	1894	By examination	Belle Plaine		
4683	Smith, W. C.	July	1894	By examination	Waverly		
4684	Smith, W. B.	July	1894	By examination	Monticello	Algona.	
4687	Smith, Edgar F.	September	1894	By examination	Monticello	Charles City.	
4717	Smith, P. R.	September	1894	By examination	Lake Mills.	Webster City.	
4721	Smith, W. O.	September	1894	By examination	Warden	Eddyville.	
4731	Smith, W. O.	September	1894	By examination	Webster		
4732	Stephenson, George E.	March	1894	By examination	Elberon		
4737	Shugart, N. K.	August	1894	By examination	St. Louis		
4738	Smith, Frank N.	December	1894	By examination	St. Louis	Burlington.	
4739	Salmon, H. M.	December	1894	By examination	West Side	Letimer.	
4742	Salford, George A.	December	1894	Graduate	St. Louis		
4752	Soper, George M.	January	1895	By examination	St. Louis		
4753	Stanley, William F.	January	1895	By examination	St. Louis		
4800	Shores, George A.	February	1895	By examination	Gladbrook	Janesville.	
4822	Snyder, Lulu B.	February	1895	By examination	Waterloo	Tripp.	
4823	Sherrard, Leslie W. O.	February	1895	By examination	Muscatine	Sweetland.	
4827	Spaniard, Joe	March	1895	By examination	See City	Washington.	
4837	Stanley, William A.	March	1895	By examination	Dexter		
4838	Storpe, William C.	March	1895	By examination	Fort Madison	Leon.	
4840	Styor, John M.	March	1895	By examination	Cedar Rapids		
4874	Shuttloworth, Hubert W.	March	1895	By examination	Des Moines	Cresco.	
4880	Spencer, Harry D.	March	1895	By examination	Des Moines	Oakland.	
4883	Seairight, Frank	March	1895	By examination	Des Moines	Mayville.	
4908	Smith, Roy B.	March	1895	By examination	Osceola	Sioux Rapids.	
4911	Sewerin, A. L.	August	1895	Graduate	Brigade	Rock Rapids.	
4914	Smith, Edw. E.	August	1895	By examination	Eagle Grove		
4919	Strauss, Carl	August	1895	By examination	Sioux Rapids		
4925	Schwartz, W. A.	August	1895	By examination	Sioux City		
4944	Stedner, A. J.	August	1895	By examination	Waverly		
4949	Sanderson, C. R.	November	1895	By examination	Des Moines		
4967	Sawyer, Eva	December	1895	By examination	Des Moines		
4968	Sanders, C. W.	December	1895	By examination	Calamus		
4971	Smith, W. H.	December	1895	By examination	Manley		
4972	Spahr, T. E.	January	1896	By examination	Greenfield		
4986	Speedling, Floyd	January	1896	By examination	Mason City	Perry.	
4987	Smith, H. M.	February	1896	By examination	Britt	Mitchell.	
4987	Smith, H. M.	February	1896	By examination	Churdam	Gladwin.	
5000	Sorensen, Hans	February	1896	By examination	Marshalltown	Eagle Grove.	
5001	Shipman, E. D.	February	1896	By examination	Wapello		
5011	Smith, L. B.	February	1896	By examination	Marshalltown		
5018	Smoke, J. F.	March	1896	Graduate	Gladbrook		
5023	Steeley, J. W.	March	1896	By examination	Prairie City	Ames.	
5031	Smutz, W. A.	March	1896	By examination	Waterloo	Eldora.	
5046	Swallow, H. W.	April	1896	By examination	Hillsboro		
5046	Shaffner, W. U.	April	1896	By examination	Hubbard	Belle Plaine.	
5046	Shaffner, W. U.	April	1896	By examination	Sanborn	Parkersburg.	
5075	Steeley, J. H.	May	1896	By examination	Waterloo	Eldora.	

ABSTRACT—CONTINUED.

Number of cer- tificate.	NAME.	DATE OF REGISTRA- TION.	HOW REGISTERED.	PLACE OF REGISTRA- TION.	LATEST REPORTED ADDRESS.	REMARKS.
5076	Sloan, J. A.	May 1896	By examination.	Eldon	Leando.	In Colorado.
5077	Simpson, G. A.	May 1896	By examination.	Eldora	Swea City	
5078	Sorlsen, A. I.	May 1896	By examination.	Decorah		
5102	Shuttleworth, E. H.	July 1896	By examination.	Nevada	Oresco.	In California.
5105	Story, C. F.	July 1896	By examination.	Stuart	Red Oak.	
5125	Starr, G. A.	August 1896	By examination.	Eldora	Perry.	
5138	Swarr, H. A.	September 1896	By examination.	Cumberland		
5145	Snow, Matilda B.	September 1896	By examination.	Garner		
5155	Schuster, G. W.	October 1896	By examination.	Cherokee		
5169	Southwick, M. E.	November 1896	By examination.	Moyle		
5190	Sarsnet, W. F.	January 1896	By examination.	Forest City	West Union.	
5181	Sarsnet, P. B.	January 1896	By examination.	Mesa-na	Laurence.	
5194	Shadle, F. S.	February 1897	By examination.	Pleasantville		
5197	Smith, G. J.	February 1897	By examination.	Killeville		
5205	Shields, W. M.	February 1897	By examination.	Sheldon		
5218	Shipley, L. U.	February 1897	By examination.	Swea City	Manilla.	
5222	Saunders, H. A.	March 1897	By examination.	Sheldon		
5244	Shipley, Henry	March 1897	By examination.	Des Moines		In Illinois.
5245	Stroud, P. E.	April 1897	By examination.	Waukon	Algona.	
5254	Smith, A. M.	April 1897	By examination.	McGregor	Delphos.	
5259	Seaton, S. H.	April 1897	By examination.	Maloy		
5281	Seaton, A. R.	May 1897	By examination.	Victor		
5292	Schultz, J. F.	May 1897	By examination.	Cumberland		
5293	Schultz, George	May 1897	By examination.	Randolph	Red Oak.	
5298	Schockley, Ned	June 1897	By examination.	Stacyville	Wesley.	
5298	Schen, L. C.	July 1897	By examination.	Le Claire		In Illinois.
5325	Southward, H. A.	September 1897	By examination.	Vinton		In South Dakota
5338	Speers, J. C.	October 1897	By examination.	Akron		
5360	Struble, A. J.	November 1897	By examination.	Lake Park		
5363	Schultz, C. S.	November 1897	By examination.	Columbus Junction.		
5364	Shallabarger, E. P.	November 1897	By examination.	Manchester.		
5384	Smith, L. C.	February 1898	By examination.	Lost Nation.		
5399	Skelley, P. B.	February 1898	By examination.	Manchester.		
5419	Storey, G. W.	March 1898	By examination.	Musouri Valley.		
5420	Shiley, G. F.	March 1898	By examination.	Monroe.		
5422	Shaw, F. W.	March 1898	By examination.	Battle Creek.		
5440	Sylvester, V. W.	April 1898	By examination.			

5446	Stiles, W. H.	April	By examination.	Garden Grove.	Little Sioux.	In Nebraska.
5447	Scott, R. W.	April	By examination.	Lamon.	Guttenberg.	
5448	Stigworth, M. P., Jr.	April	By examination.	Amos.		
5449	Schroeder, R. E.	April	By examination.	Garnaville.		
5450	Storch, H. C.	June	By examination.	Sheffield.		In Illinois.
5451	Smith, H. P.	June	By examination.	Lime Springs.		
5452	Smith, J. S.	April	By examination.	Decorah City.		
5453	Striegel, J. P.	July	Graduate.	Waterloo.	Ryan.	In Illinois.
5454	Scott, E. N.	July	By examination.	Oscola.	Logan.	
5455	Schiller, Edgar	July	Graduate.	Grand Junction.	Belle Plaine.	
5456	Shumaker, J. L.	August	Graduate.	Des Moines.		In Colorado.
5457	Suby, J. I.	August	Graduate.	Forest City.		In Wisconsin.
5458	Sperling, Frank	August	Graduate.	Corning.		
5459	Sheppard, S. H.	August	Graduate.	Mt. Pleasant.		
5460	Smith, D. L.	August	By examination.	Madrid.	Dickens.	
5461	Stevenson, Archie	September	Graduate.	Des Moines.	Tripoli.	In Illinois.
5462	Smith, F. C.	October	Graduate.	Bancroft.	Ossage.	
5463	Snyder, C. J.	November	Graduate.	Aurelia.	Armstrong.	
5464	Stevens, E. E.	December	By examination.	Traer.		
5465	Smith, G. F.	December	By examination.	Eldora.	Manilla.	
5466	Strasser, M. F.	December	By examination.	Reynard.		
5467	Stevens, Lois M.	December	By examination.	Montour.		
5468	Stahl, S. E.	December	By examination.	Bancroft.		
5469	Smith, B. E.	January	By examination.	Barlington.	Wapello.	
5470	Smith, C. W.	January	By examination.	Columbus Junction.		
5471	Shipman, C. V.	January	Graduate.	Elgin.		
5472	Stoehr, G. L.	March	By examination.	Onawa.		
5473	Selleck, E. C.	March	By examination.	Corydon.	Hedrick.	In Missouri.
5474	Snipley, E. F.	March	Graduate.	Des Moines.		In N. Dakota.
5475	Smith, Channing	March	Graduate.	Newton.		
5476	Stolte, F. L.	March	Graduate.	Iowa City.		
5477	Shammond, Bernice M.	April	By examination.	Des Moines.		
5478	Simons, M. O.	April	Graduate.	Morning Sun.	Yetter.	
5479	Swan, W. C.	April	Graduate.	Marble Rock.		
5480	Speeding, E. W.	May	Graduate.	Des Moines.	Zearing.	
5481	Seymour, J. C.	May	By examination.	Manly.	Clarinda.	
5482	Saunders, V. O.	May	Graduate.	Tama.		
5483	Schmer, F. A.	June	Graduate.	Cascade.		
5484	Soleman, F.	June	Graduate.	Stout City.	Des Moines.	In Illinois.
5485	Bert, J. McDonald.	July	Graduate.	Dubuque.		
5486	Schellinger, W. D.	July	By examination.	Manning.		
5487	Smith, A. E.	August	Graduate.	Ferry.	Rockwell City.	
5488	Stensrud, Albert	September	By examination.	Dubuque.		
5489	Sackett, W. L.	September	By examination.	Lake Mills.	De Soto.	
5490	Stouder, Marion R.	September	By examination.	Ottumwa.		
5491	Sturdevant, J. N.	October	By examination.	Des Moines.		In Nebraska.
5492	Staubach, F. D.	November	By examination.	Des Moines.		
5493	Stearle, Harry L.	November	Graduate.	Pella.		
5494		December	Graduate.	Des Moines.	Rock Valley.	

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
5876	Sherman, James E.	December 5, 1899	By examination.	Fort Dodge, Villars.		
5877	Shepard, J. Frank	December 2, 1899	Graduate.	Des Moines	Marburg.	
5889	Scott, Clyde B.	January 2, 1900	By examination.	Gresco		
5896	Schimming, J. G.	January 6, 1900	By examination.	Wyoming	Woodward.	
5909	Smith, Emory A.	February 6, 1900	By examination.	Andover.		
5925	Smith, F. W.	February 6, 1900	Graduate.	Gravely.		
5941	Stinson, Kent T.	March 6, 1900	By examination.	Beacon.	Eldora.	
5956	Stians, Frank	March 6, 1900	Graduate.	West Point	Harlan.	
5969	Schroeder, Bernard H.	April 8, 1900	By examination.	Montour	Sac City.	
5988	Scott, Frank J.	April 1, 1900	Graduate.	Pilot Mound.	Runnells.	
5996	Switzer, Arnold W.	May 1, 1900	Graduate.	Toledo	Cedar Rapids.	
6006	Stansbury, Wilbur H.	May 1, 1900	Assistant.	Spencer	Rockwell.	
6014	Severin, A. L.	May 1, 1900	Graduate.	Cedar Falls.	Fort Dodge.	
6018	Schiller, H. A.	May 1, 1900	By examination.	Carroll.	Des Moines.	
6019	Schneider, Chas. F.	May 1, 1900	By examination.	Kingsley.		
6024	Schmalzried, Ed.	May 1, 1900	By examination.	Des Moines.		
6032	Schneider, Frank E.	May 5, 1900	Graduate.	Milford.		
6051	Stephenson, J. O.	June 8, 1900	Graduate.	Mt. Vernon	Clinton.	Montana.
6063	Shaw, J. A.	July 8, 1900	Assistant.	Retherville		
6064	Seldenschneider, J. W.	July 8, 1900	By examination.	Sigourney.	Ottumwa.	
6065	Shurts, C. Y.	July 8, 1900	Graduate.	Des Moines		
6066	Shaffer, Thos. B.	July 8, 1900	Graduate.	Des Moines		
6068	Stephenson, Wm. P.	August 7, 1900	Graduate.	Keokuk.		
6069	Suffred, Wm. H.	August 7, 1900	Graduate.	Hawkeye.		
6102	Strain, Wm. P.	August 7, 1900	By examination.	Des Moines.		
6107	Smith, Fred E.	August 7, 1900	Graduate.	West Union.		
6109	Schnelder, Fred W.	August 7, 1900	By examination.	Des Moines.		
6118	Slaughter, Geo. A.	August 7, 1900	Graduate.	Des Moines.		
6132	Schultz, Geo. F.	September 2, 1900	By examination.	Le Mars.		
6144	Schmidt, Julius H.	September 2, 1900	Graduate.	Nashua.		
6185	Stephan, Charles W.	October 2, 1900	Graduate.	Dubuque.		
6186	Stenmo, Martin T.	October 8, 1900	Graduate.	Des Moines.		
6170	Snelly, Thos. A.	November 8, 1900	Graduate.	Cedar Rapids.		
6171	Spiters, Roscoe C.	November 8, 1900	Graduate.	Des Moines.		
6177	Shearer, Geo. N.	December 4, 1900	Graduate.	Collins.		
						Hatton, N. D. Rolf. Hedrick.

6192	Swarts, Frank G.	December	4, 1900	By examination.	Silver City.	Missouri Valley.	
6193	Shaw, H. F.	December	4, 1900	By examination.	Albia.	Sidney.	
6194	Sundmeier, Ben H.	December	4, 1900	By examination.	Bancroft.		
6195	Smith, Arthur E.	December	4, 1900	By examination.	Eagle Grove.		
6212	Slocum, J. W.	January	1, 1901	By examination.	Indianola.		In Illinois.
6214	Scabloom, John	February	5, 1901	Graduate	Centerville		
6232	Singart, Geo. Z.	February	5, 1901	By examination.	Elberon	Chilsea.	
6233	Stover, B. H.	February	5, 1901	By examination.	Marengo	Spencer.	
6243	Schmidt, Wm.	March	5, 1901	As assistant.	La Porte City.	Mason City.	
6253	Savre, L. S.	April	2, 1901	Graduate	Kennett	Olewehn.	
6262	Sarsnet, Clarence F.	April	2, 1900	By examination.	Marion		
6263	Straley, Will L.	April	2, 1900	By examination.	Harper		
6264	Sondag, Nick	May	7, 1901	By examination.	Orange City.	Sioux Center.	
6275	Schalokamp, H. J.	May	7, 1901	Graduate	Davenport.		
6276	Sadler, Peter M. A.	May	7, 1901	Graduate	Tama	Montour.	
6278	Stayskal, Joseph	May	7, 1901	Graduate	Britt	Tracy.	
6290	Stibgen, Robt. H.	May	7, 1901	Graduate	Oakalosa		
6300	Stein, J. R.	May	7, 1901	By examination.	Pella		
6303	Sloan, Nelson A.	May	7, 1901	By examination.	Trar	Waukon.	
6309	Smith, Ray J.	May	7, 1901	By examination.	Stacyville.		
6313	Schen, Henry	May	7, 1901	By examination.	Waterloo.		
6318	Scroggy, Jno. Q. A.	June	4, 1901	Graduate	Council Bluffs.		
6338	Schott, John W.	August	4, 1901	Graduate	Cumberland	Massena.	In Washington.
6379	Sears, H. B.	August	6, 1901	Graduate	Hancock	Corning.	In Kansas.
6382	Shultz, S. R.	August	6, 1901	Graduate	Murray		In Minnesota.
6388	Schaff, C. H.	August	6, 1901	Graduate	Des Moines.		In Minnesota.
6392	Cebolten, J. P.	August	6, 1901	Graduate	Des Moines.		In Illinois.
6405	Stadon, J. H.	September	2, 1901	Graduate	Des Moines.		
6415	Samuela, John J.	September	2, 1901	Graduate	Des Moines.		
6441	Schultz, H. N.	October	1, 1901	Graduate	Des Moines.		
6448	Symons, W. J.	October	1, 1901	Graduate	Des Moines.		
6462	Singer, A. F.	October	1, 1901	By examination.	Oakalosa.	Ackley.	
6467	Sloan, R. E.	October	1, 1901	By examination.	Keosauqua	Leon.	
6479	Schommer, John	November	7, 1901	Graduate	Sioux City.		
6501	Steen, H. C.	December	8, 1901	By examination.	Rock Valley.		
6502	Schulz, Will F.	December	8, 1901	By examination.	Sioux Rapids.		
6517	Sperry, E. B.	January	7, 1902	By examination.	Dubuque	Oresco.	
6572	Strayer, W. G.	March	4, 1902	By examination.	Des Moines.		
6618	Swahn, J. W.	April	1, 1902	Graduate	Hudson.		
6618	Strong, H. L.	April	1, 1902	Graduate	Forest City.		
6622	Sullivan, P. F.	April	1, 1902	Graduate	Vinton.		
6622	Shull, H. W.	April	1, 1902	Graduate	Iowa City.	Waterloo.	In Nebraska.
6629	Stotts, O. D. B. W.	April	1, 1902	By examination.	Yale.		
6638	Schuneman, R. H.	April	22, 1902	By examination.	Des Moines.		
6654	Sutton, R. H.	April	22, 1902	Graduate	Shenandoah.		
6660	Suerman, H. A.	May	5, 1902	Graduate	Des Moines.		In Indiana.
6670	Shears, C. W.	May	5, 1902	Graduate	Newton	Des Moines.	
6671	Stutts, A. B.	May	5, 1902	Graduate	Waterloo.		In Illinois.
6687	Stahl, E. E.	May	5, 1902	By examination	Bancroft	Buffalo Center.	

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
6704	Smith, O. O.	June	Graduate	Clarkville	Des Moines.	
6705	Saunders, O. H.	June	By examination	Albia.		In Missouri.
6706	Simmons, V. M.	June	By examination	Des Moines.		In Nebraska.
6707	Stenglein, Chas. A.	June	By examination	Council Bluffs.		In Oklahoma.
6708	Songster, J. W.	June	Graduate	Des Moines.	Perry.	
6709	Sager, A. D.	July	By examination	Dexter.		
6710	Shipley, Geo. U.	July	By examination	Sheldon.		
6711	Sherman, Fort.	July	By examination	Washington.		
6712	Smith, A. N.	July	By examination	Winteret.	Des Moines.	
6713	Smith, A. N.	July	By examination	St. Charles.		
6714	Shirves, E. F.	July	By examination	Remsen.		
6715	Schultz, A. F.	July	By examination	St. Charles.		
6716	Stemmer, Chas. F.	August	Graduate	Strawberry Point.		
6717	Schaeffer, John.	August	Graduate	Mitchellville.	Elkhart.	
6718	Scott, Chas. A.	August	Graduate	Paulina.	Alton.	
6719	Skoglund, Edward.	August	Graduate	Dayton.		
6720	Sanders, M.	August	Graduate	Des Moines.	Woolstock.	
6721	Smith, W. C.	August	Graduate	Clinton.		In Illinois.
6722	Shannon, R. L.	August	By examination	Sheldon.		
6723	Sauls, J. S.	August	Graduate	Des Moines.		In Nebraska.
6724	Schultz, J. E.	August	Graduate	Des Moines.	Dowa.	
6725	Sweetburg, Charles.	October	Graduate	Des Moines.		In Wisconsin.
6726	Smith, E. E.	October	Graduate	Des Moines.		In Indiana.
6727	Stephens, R. B.	October	Graduate	Davenport.		In Illinois.
6728	Stevens, H. I.	October	Graduate	Decorah.		In S. Dakota.
6729	Stevens, H. I.	October	Graduate	Decorah.		
6730	Smith, Chas. H.	October	Graduate	Adair.	Garden City.	In Arkansas.
6731	Smith, Ed. P.	October	Graduate	Adair.		In California.
6732	Schultz, Henry.	October	Graduate	Adair.		
6733	Starbuck, F. N.	October	By examination	St. Louis.		
6734	Starbuck, Lorenz.	October	By examination	St. Louis.		
6735	Strom, H. O.	October	By examination	Marion.		
6736	Stiebel, J. O.	October	By examination	Kimballton.		
6737	Stiebel, J. O.	October	By examination	Kimballton.		
6738	Stiebel, J. O.	October	By examination	Kimballton.		
6739	Stiebel, J. O.	October	By examination	Kimballton.		
6740	Stiebel, J. O.	October	By examination	Kimballton.		
6741	Stiebel, J. O.	October	By examination	Kimballton.		
6742	Stiebel, J. O.	October	By examination	Kimballton.		
6743	Stiebel, J. O.	October	By examination	Kimballton.		
6744	Stiebel, J. O.	October	By examination	Kimballton.		
6745	Stiebel, J. O.	October	By examination	Kimballton.		
6746	Stiebel, J. O.	October	By examination	Kimballton.		
6747	Stiebel, J. O.	October	By examination	Kimballton.		
6748	Stiebel, J. O.	October	By examination	Kimballton.		
6749	Stiebel, J. O.	October	By examination	Kimballton.		
6750	Stiebel, J. O.	October	By examination	Kimballton.		
6751	Stiebel, J. O.	October	By examination	Kimballton.		
6752	Stiebel, J. O.	October	By examination	Kimballton.		
6753	Stiebel, J. O.	October	By examination	Kimballton.		
6754	Stiebel, J. O.	October	By examination	Kimballton.		
6755	Stiebel, J. O.	October	By examination	Kimballton.		
6756	Stiebel, J. O.	October	By examination	Kimballton.		
6757	Stiebel, J. O.	October	By examination	Kimballton.		
6758	Stiebel, J. O.	October	By examination	Kimballton.		
6759	Stiebel, J. O.	October	By examination	Kimballton.		
6760	Stiebel, J. O.	October	By examination	Kimballton.		

ABSTRACT—CONTINUED.

Number of certificates.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
4179	Torrence, J. D.	June 7, 1893	By examination.	Kamrar.		
4180	Thurlmann, Ed.	August 1, 1893	By examination.	Carroll.		
4564	Toole, Charles O.	January 2, 1894	By examination.	Ketherville.	In South Dakota.	
4683	Thompson, Joseph.	June 3, 1894	By examination.	Sioux City.	Adel.	In Missouri.
4682	Taylor, James L.	28, 1894	By examination.	Greenfield.		
4711	Tatman, Pearl J.	August 9, 1894	By examination.	Centerville.		
4749	Tobey, Charles S.	October 2, 1894	By examination.	Des Moines.		
4781	Thorne, Matt L.	December 4, 1894	By examination.	Dubuque.	Richland.	
4786	Trueblood, W. A.	January 1, 1895	By examination.	Central City.		
4855	Trumbull, Thomas.	April 1, 1895	By examination.	Adair.		
4906	Trumbo, Thomas.	July 10, 1895	By examination.	Des Moines.	Avery.	
4988	Tabler, E. F.	October 1, 1895	By examination.	Colfax.	West Liberty.	
4988	Tapper, W. J.	February 1, 1896	By examination.	Monona.	Rowley.	
5010	Thurlmann, Leo.	March 3, 1896	By examination.	Carroll.		
5081	Tiss, G. J.	April 21, 1896	By examination.	Corwith.	Mason City.	In Washington.
5100	Todd, G. A.	June 22, 1896	Graduate.	Murray.	Aberdeen.	
5107	Trumbull, Mrs. I. F.	July 7, 1896	By examination.	Adair.		
5186	Ternes, G. W.	January 14, 1897	By examination.	Dubuque.		
5192	Tiedals, W. H.	January 14, 1897	By examination.	State Center.	Mt. Auburn.	
5201	Teuscher, David.	February 2, 1897	By examination.	Victor.	Keota.	
5298	Trumbull, E. J.	April 6, 1897	By examination.	Union.	Coarad.	
5339	Twining, E. Leroy.	April 6, 1897	By examination.	Des Moines.		
5356	Todd, J. A.	July 6, 1897	By examination.	Waterloo.		
5397	Thomas, J. J.	July 6, 1897	By examination.	Whiting.		
5398	Thomas, S. R.	July 6, 1897	By examination.	Fairfield.		
5398	Thomas, D. W.	October 1, 1897	By examination.	Des Moines.	Randolph.	
5396	Tobin, C. S.	December 1, 1897	By examination.	Osgo.	Ringstead.	
5439	Taylor, J. B.	April 1, 1898	By examination.	Centerville.		
5453	Tague, Marion S.	March 31, 1898	Graduate.	Vinton.	Urbana.	In California.
5491	Tubbs, H. S.	May 31, 1898	By examination.	Charles City.		
5510	Treat, J. W.	June 7, 1898	By examination.	Des Moines.		In Illinois.
5518	Tilson, J. W.	July 7, 1898	By examination.	Waba.	Allison.	
5548	Trimble, Rose E.	August 6, 1898	Graduate.	Des Moines.	Lone Rock.	
5596	Thomas, B. C.	May 6, 1899	By examination.	Wyoming.		
5599	Thompson, E. T.	May 6, 1899	By examination.	Des Moines.		
5727	Tully, N. A.	July 6, 1899	Graduate.	Waterloo.		
5766	Tyndale, G. S.	August 1, 1899	Graduate.	Des Moines.	Hardy.	

5770	Teeters, W. J.	August	1, 1899	Graduate	Iowa City.	.....	Out of state.
5802	Thoreson, Edward	September	5, 1899	Graduate	Stanhope.	.....	.....
5840	Taylor, Amelia V.	November	9, 1899	Graduate	Des Moines.	.....	.....
5841	Thompson, Geo. H.	November	9, 1899	Graduate	Badger	.....	Montour.
5852	Trent, Will W.	November	9, 1899	By examination	Oacola	.....	Albia.
5890	T. Imbo, Joseph H.	January	6, 1900	Graduate	Des Moines	.....	Harcourt.
5908	Thomas, William	February	2, 1900	By examination	Aurora	.....	Oneida.
5928	Tomasak, Joseph	February	6, 1900	By examination	Cedar Rapids.	.....	.....
5949	Taggart, Hugh W.	June	5, 1900	By examination	Waterloo	.....	Mason City.
6060	Tank, P. M.	June	5, 1900	By examination	Schaller	.....	Dunlap.
6114	Trowbridge, D. L.	September	4, 1900	Graduate	Des Moines	.....	.....
6153	Tiedman, E. J.	October	2, 1900	By examination	Mason City	.....	In Washington.
6209	Thiesien, H. C.	November	8, 1900	Graduate	Des Moines	.....	In Wisconsin.
6296	Thompson, Robt. A.	January	7, 1901	Graduate	Story City	.....	.....
6301	Taggart, Homer G.	May	7, 1901	By examination	Waterloo	.....	.....
6396	Tapster, Chas. G.	August	6, 1901	By examination	Stanhope	.....	Riverside.
6410	Thomas, F. S.	September	2, 1901	Graduate	Morningside	.....	.....
6448	Tobin, J. H.	October	1, 1901	Graduate	Newton	.....	In Dakota.
6458	Toniley, Chas. D.	October	1, 1901	Graduate	Independence	.....	.....
6458	Thackeray, James	October	1, 1901	Graduate	Des Moines	.....	In Missouri.
6570	Townley, F. L.	March	4, 1902	Graduate	Des Moines	.....	In Illinois.
6577	Turner, W. A.	April	1, 1902	Graduate	Muscatine	.....	In Indiana.
6639	Thurston, Henry	April	1, 1902	By examination	Des Moines	.....	In Nebraska.
6652	Thomason, E. S.	April	1, 1902	By examination	Northwood	.....	.....
6772	Turkington, E. C.	May	5, 1902	Graduate	Villisca	.....	Pocahontas.
6782	Tice, T. A.	August	5, 1902	Graduate	Columbus Junction	.....	.....
6783	Thompson, J. V.	August	5, 1902	Graduate	Villisca	.....	In Missouri.
6784	Thompson, L. S.	August	5, 1902	Graduate	Walnut	.....	.....
6785	Townswick, T. R.	August	5, 1902	Graduate	Des Moines	.....	Stoux City.
6796	Tigner, R. N.	August	5, 1902	Graduate	Columbus City	.....	Hampton.
6797	Torgerson, Thomas	August	5, 1902	Graduate	Farmhamville	.....	Laurens.
6832	Timmons, Chas. W.	October	7, 1902	Graduate	Lake Mills	.....	Mason City.
6840	Treber, J. A.	December	7, 1902	Graduate	Des Moines	.....	.....
6861	Tonner, G. B.	February	2, 1903	Graduate	Cedar Rapids	.....	In Indiana.
6862	Tyler, W. C.	February	2, 1903	Graduate	Des Moines	.....	In S. Dakota.
6868	Thomis, W. E.	February	2, 1903	Graduate	Des Moines	.....	In Nebraska.
6869	Thome, John	February	2, 1903	Graduate	Des Moines	.....	In Indiana.
6870	Tichy, Chas.	February	2, 1903	By examination	Dubuque	.....	.....
6871	Thomas, E. U.	March	2, 1903	Graduate	Cedar Rapids	.....	In Illinois.
6874	Taylor, J. E.	April	2, 1903	Graduate	Sheldon	.....	Granville.
7015	Tank, Julius	May	5, 1903	Graduate	Des Moines	.....	.....
804	Udell, A. S.	June	18, 1903	As owner	Manning	.....	.....
8223	Underwood, Poe	June	18, 1903	By examination	Ottumwa	.....	Birmingham.
4016	Ullum, S. A.	June	18, 1903	By examination	Des Moines	.....	.....
4739	Usher, M.	April	12, 1894	By examination	Vinton	.....	.....
4813	Underwood, William	February	2, 1903	By examination	Dubuque	.....	Dexter.
5256	Udigrift, S. L.	October	4, 1903	By examination	Elkader	.....	Dallas Center.
5860	Uhras, F. W.	November	1, 1903	Graduate	Des Moines	.....	.....
5877	Udell, Nathan	February	6, 1900	By examination	Barlingham	.....	In Illinois.
					Centerville	.....	Denver, Colo.

ABSTRACT--CONTINUED.

NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
Unz, O. F.	March 7, 1900	By examination	Kingsley	Harris.	In Indiana.
Underwood, J. J.	June 4, 1901	By examination	Sharpsburg	Des Moines.	
Ulich, J. J.	December 8, 1901	Graduate	Elberon		
Van Meter, James G.	June 4, 1890	As owner	Belle Plaine.		
Van Cise, Isaac P.	June 8, 1890	As owner	Mt. Pleasant.		
Vittecoe, Hiram	July 8, 1890	As principal	Harper	Oile.	
Van Ness, Isaac T.	January 17, 1891	By examination	Minden	Neola.	
Van Weiden, L.	January 21, 1892	By examination	Leon		
Van Leuven, G. M.	February 21, 1892	By examination	Lime Springs		
Varnier, T. H.	April 7, 1895	By examination	Angus		
Vincent, William A.	February 21, 1898	Graduate	Belle Plaine.		
Vincent, George I.	January 6, 1899	By examination	Sac City	Oakaloesa.	
Van Ausdahl, G. M.	February 6, 1899	By examination	New London.		
Vanderly, John	June 11, 1899	By examination	Seranton	Gowrie.	
Vance, J. E.	May 8, 1891	By examination	Leon		
Vaith, Ed Morris.	November 10, 1891	By examination	Marshalltown.		
Vaul, E. S.	February 6, 1894	By examination	Des Moines.		
Venck, E. S.	February 6, 1895	By examination	Seranton	Chesterfield.	
Van Sickle, Clark	February 6, 1895	By examination	Oakaloesa	New Sharon.	
Vickers, Will	March 2, 1894	By examination	Granville.	Chicago, Ill.	
Vosburg, Paul B	April 2, 1894	By examination	Clinton		
Van Delden, Egbert	May 6, 1896	By examination	Harper		
Valerius, Matt	May 6, 1896	By examination	Oedar Rapids.		
Vosmek, J. H.	May 6, 1896	By examination	Renwick	Ottoesen.	
Vols, G. L.	May 6, 1896	By examination	Storm Lake	Newell.	
Vogel, H. A.	October 6, 1896	By examination	Des Moines.		
Vrooman, F. E.	December 15, 1897	Graduate	Des Moines.		
Voogd, Dick	August 20, 1898	By examination	Applington.	Hospers.	In Missouri.
Varnum, Ray	August 8, 1898	Graduate	Des Moines	Rock Rapids.	
Vickers, Grant	July 18, 1899	By examination	Inwood		
Vogt, Carl A.	November 9, 1899	Graduate	Davenport		
Van Donselaar, F. C.	August 7, 1900	Graduate	Pella.		
Vinsonhaber, F. C.	August 2, 1901	Graduate	Indianola.		
Van Dyke, L. B.	August 6, 1901	Graduate	Des Moines.		In Wyoming.
Van Valen, E. C.	August 8, 1901	By examination	Atlantic		In Nebraska.
Vredland, J. M.	September 8, 1901	By examination	Sioux City		In Illinois.
Vincent, Michael	October 1, 1901	Graduate	Sigourney		In Kansas.
Vincent, J. B.	October 1, 1901	Graduate	Lineville.		

No.	Name	Date	Examination	Status	Place	In
6405	Vernoy, Charles E.	December	Graduate	By examination	Des Moines	In Pennsylvania
6406	Vies, H. L.	February	By examination	Graduate	Grinnell	.....
6407	Van Den Berg, Guy	April	By examination	Graduate	Alton	.....
6412	Voss, C. E.	December	By examination	.....	.....	.....
6413	Webb, John B.	June	As owner	.....	Webster City.	.....
6414	Walgamot, A. R.	June	As owner	.....	.....	.....
6415	Welch, George H.	June	As owner	.....	.....	.....
6416	Wilken, R. D.	June	As owner	.....	.....	.....
6417	Wicks, C. A.	June	As owner	.....	.....	.....
6418	Woodsbury, Geo. W.	June	As owner	.....	.....	.....
6419	Wolton, S. B.	June	As owner	.....	.....	.....
6420	Wunderlich, G. W.	June	As owner	.....	.....	.....
6421	Walker, William A.	June	As owner	.....	.....	.....
6422	Wolfer, G. A. J.	June	As owner	.....	.....	.....
6423	Ward, Joseph A.	June	As owner	.....	.....	.....
6424	Ward, William J.	June	As owner	.....	.....	.....
6425	Williamson, W. R.	June	As owner	.....	.....	.....
6426	Worth, Fordyce	June	As owner	.....	.....	.....
6427	Woodruff, M. W.	June	As owner	.....	.....	.....
6428	Weaver, A. R.	June	As owner	.....	.....	.....
6429	Wilson, O. R.	June	As owner	.....	.....	.....
6430	Ward, C. H.	June	As owner	.....	.....	.....
6431	Willis, Milo W.	June	As owner	.....	.....	.....
6432	Willis, Arthur E.	June	As owner	.....	.....	.....
6433	Webster, J. C.	June	As owner	.....	.....	.....
6434	Wyman, J. H.	June	As owner	.....	.....	.....
6435	Wangler, C. D.	June	As owner	.....	.....	.....
6436	Wangler, R. O.	June	As owner	.....	.....	.....
6437	White, John H.	June	As owner	.....	.....	.....
6438	Webster, Henry G.	June	As owner	.....	.....	.....
6439	Whetstone, J. H.	June	As owner	.....	.....	.....
6440	Wilson, J. H.	June	As owner	.....	.....	.....
6441	Weeks, A. J.	June	As owner	.....	.....	.....
6442	Wells, Willis C.	June	As owner	.....	.....	.....
6443	Wright, George J.	June	As owner	.....	.....	.....
6444	White, W. P.	June	As owner	.....	.....	.....
6445	Wilson, A. C.	June	As owner	.....	.....	.....
6446	Woodbridge, M. L.	June	As owner	.....	.....	.....
6447	Woodbrook, M. H.	June	As owner	.....	.....	.....
6448	Wood, Dexter L.	June	As owner	.....	.....	.....
6449	Wright, W. M.	June	As owner	.....	.....	.....
6450	Westbrook, C. H.	June	As owner	.....	.....	.....
6451	Wright, William F.	June	As owner	.....	.....	.....
6452	Wright, M. G.	June	As owner	.....	.....	.....
6453	Wentworth, E. G.	June	As owner	.....	.....	.....
6454	Webb, Vernon S.	June	As owner	.....	.....	.....
6455	Wheaton, Charles	June	As owner	.....	.....	.....
6456	Ward, Perry	June	As owner	.....	.....	.....
6457	Des Moines	Des Moines	Des Moines	Des Moines	Des Moines	Des Moines
6458	Grinnell	Grinnell	Grinnell	Grinnell	Grinnell	Grinnell
6459	Alton	Alton	Alton	Alton	Alton	Alton
6460	Webster City.	Webster City.	Webster City.	Webster City.	Webster City.	Webster City.
6461	Leon	Leon	Leon	Leon	Leon	Leon
6462	Salem	Salem	Salem	Salem	Salem	Salem
6463	Swiss City	Swiss City	Swiss City	Swiss City	Swiss City	Swiss City
6464	St. Charles	St. Charles	St. Charles	St. Charles	St. Charles	St. Charles
6465	Knorrville	Knorrville	Knorrville	Knorrville	Knorrville	Knorrville
6466	Des Moines	Des Moines	Des Moines	Des Moines	Des Moines	Des Moines
6467	Waterloo	Waterloo	Waterloo	Waterloo	Waterloo	Waterloo
6468	Correctionville	Correctionville	Correctionville	Correctionville	Correctionville	Correctionville
6469	Defiance	Defiance	Defiance	Defiance	Defiance	Defiance
6470	Leon	Leon	Leon	Leon	Leon	Leon
6471	Estherville	Estherville	Estherville	Estherville	Estherville	Estherville
6472	Cedar Rapids	Cedar Rapids	Cedar Rapids	Cedar Rapids	Cedar Rapids	Cedar Rapids
6473	Central City	Central City	Central City	Central City	Central City	Central City

ABSTRACT—CONTINUED.

Number of certificates.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
2866	Wilder, John J.	July 31, 1883	By examination.	Early.	Kingsley	
2868	Wright, P. J.	November 5, 1883	By examination.	Jewell Junction.	Eagle Grove.	
2746	Wright, L. D.	May 6, 1884	By examination.	Knoxville.		
2755	Wolbel, Theodore.	May 6, 1884	By examination.	Mt. Pleasant.		
2825	Waldburger, J. C.	January 3, 1885	By examination.	Lehigh.	Fort Dodge.	
2848	White, Ira.	March 12, 1885	By examination.	Jamaica.	Panora.	
2852	Wallace, A. H.	April 7, 1885	By examination.	Independence.		
2859	Wilson, J. E.	April 8, 1885	By examination.	Ottumwa.		
2862	Wyckoff, Will C.	May 12, 1885	By examination.	Rock Rapids.		
2879	Wachtel, Leo C.	October 6, 1886	By examination.	New Hampton.	Elma.	
2866	Wiley, Frank B.	March 2, 1886	By examination.	Marshalltown.		
2901	Wagley, O. N.	March 19, 1886	By examination.	Newton.		
8000	Wilhelm, Thomas F.	March 29, 1886	By examination.	Fort Dodge.	Winterset.	
8018	Waterberry, D. D.	April 25, 1886	Graduate.	Fayette.		
8019	Wittmer, Joseph W.	June 9, 1886	Graduate.	Dubuque.		
8102	Walker, F. S.	July 23, 1886	By examination.	Peterson.		
8154	Williams, J. I.	November 23, 1886	By examination.	Mason City.	Winterset.	
8140	Welherd, F. D.	February 15, 1887	By examination.	Hampton.	Waverly.	
8142	West, Frank J.	February 23, 1887	By examination.	New Hartford.		
8150	Wick, Rolin E.	March 2, 1887	By examination.	Des Moines.		
8168	Whitney, E. F.	March 15, 1887	By examination.	Lake View.		
8167	Walrod, Mrs. C. J.	March 21, 1887	By examination.	Moravia.	Storm Lake.	Out of business.
8241	Will, D. H.	May 17, 1887	By examination.	De Witt.	Rolfe.	
8245	Webb, Charles M.	May 17, 1887	By examination.	Des Moines.		
8254	Woodman, J. W.	June 21, 1887	By examination.	Holstein.	Council Bluffs.	
8263	Walker, John T.	August 4, 1887	By examination.	What Cheer.		
8268	Wheeler, Samuel E.	August 2, 1887	By examination.	Conrad.		
8292	Wright, Cyrus.	October 2, 1887	By examination.	Bellevue.	Van Horne.	In Oklahoma.
8271	Ward, Samuel G.	November 23, 1888	By examination.	Adair.		
8276	Worres, Jacob L.	January 7, 1888	By examination.	Kingsey.		
8298	Wilson, C. V.	February 5, 1888	Graduate.	Des Moines.		
8311	Wood, Frank F.	March 23, 1888	By examination.	Coln.		
8405	Wiggins, D. L.	May 15, 1888	By examination.	Grinnell.	Ottumwa.	In Missouri.
8468	Watson, George E.	July 21, 1888	By examination.	West Liberty.		
8468	Wallerstein, Joseph.	August 21, 1888	By examination.	Mt. Ayr.	Montour.	In Wisconsin.
8523	Warren, B. C.	September 4, 1888	By examination.			

8543	Welton, A. B.	October	16, 1888	By examination	Wagner	Webster City.
8545	White, Fred W.	November	19, 1888	By examination	Clermont	West Union.
8601	Wasser, Lot E.	November	24, 1889	By examination	St. Louis City.	Rolle.
8603	Wawel, Joseph	February	18, 1889	By examination	Mt. Carmel	
8304	Wright, Frank	February	24, 1889	By examination	Conway	
8649	Walker, L. M.	April	24, 1889	By examination	Afton	Waterloo.
8660	Wray, J. W.	May	27, 1889	By examination	Wakarusa	
8665	Williams, J. Cal.	May	27, 1889	By examination	What Cheer.	
8673	Wood, George W.	June	6, 1889	By examination	McGregor	Des Moines.
8723	Whitfield, Arthur	September	4, 1889	By examination	Callopo	Hawarden.
8736	Winfrey, J. H.	September	17, 1889	By examination	Cambridge	Ria tie.
8772	Woodward, H. H.	November	25, 1889	By examination	Freibourne	Adair.
8786	Wetler, R. L.	January	7, 1890	By examination	Pedrick	
8820	Wilson, O. L.	February	1, 1890	By examination	Kingsley	Holstein.
8832	Waugb, Walter	February	18, 1890	By examination	Milo	
8835	Way, Elyard C.	February	24, 1890	By examination	Britt	Mason City.
8843	Wilson, Jos B.	March	18, 1890	By examination	Oskaloosa	Aaron.
8845	Way, Walter I.	March	18, 1890	By examination	Keokuk	Nevada.
8846	Wilson, Frank D.	March	18, 1890	By examination	Marion	
8863	Wilson, Anne B.	March	31, 1890	By examination	Underwood	
8902	Wlad, A. O.	March	15, 1890	By examination	Oscar Falls.	
8906	Wise, C. H.	March	15, 1890	By examination	Blancoe	
8940	Wheeler, J. F. C.	September	20, 1890	By examination	Latina	Des Moines.
8944	Wheeler, C. J.	October	7, 1890	By examination	Lehigh	Muscataine.
8946	Wheeler, C. J.	October	7, 1890	By examination	Brush Creek	
8953	Wesley, Oscar F.	December	7, 1890	By examination	Kellogg	
8956	Walrath, B. B.	February	7, 1891	By examination	Le Grande	
4011	West, William H.	February	7, 1891	By examination	Kyett	Curlew.
4014	Wesver, O. A.	March	15, 1891	By examination	Oskaloosa	Lebanon.
4083	Walker, D. J.	April	15, 1891	By examination	Oskaloosa	Buxton.
4088	Williams, Jack	May	8, 1891	By examination	Oskaloosa	Oakland.
4089	Walkey, James A.	May	8, 1891	By examination	Oskaloosa	
4097	Walkey, James A.	June	8, 1891	By examination	What Cheer.	Maquoketa.
4140	Walters, J. H.	June	10, 1891	By examination	Des Moines	
4170	Winchell, John E.	February	10, 1892	By examination	Malcom	Mechanicsville.
4175	Welch, John W.	February	10, 1892	By examination	Tipton	
4214	Walker, John C.	February	6, 1892	By examination	New Market	
4216	Whitlock, C. E.	April	7, 1892	By examination	Des Moines	Ooscola.
4230	Weirick, Harry A.	April	12, 1892	By examination	Newton	
4240	Weber, John H.	April	7, 1892	By examination	Cascade	
4278	Watson, Charles	June	24, 1892	By examination	Vail	Idaho.
4283	Wangler, Joseph P.	July	24, 1892	By examination	Waterloo	
4297	Whitacre, J. C.	August	4, 1892	Graduate	Webster City	
4341	Waterbury, M. O.	September	6, 1892	By examination	Jewell Junction	In Oklahoma.
4347	Woodard, Will C.	December	6, 1892	By examination	Marshalltown	
4361	Westbrook, Burr	January	8, 1893	By examination	Newton	
4366	Willett, O. A.	January	31, 1893	By examination	Seranton	Chelsea.
4389	Wheeler, C. A.	March	10, 1893	Graduate	Council Bluffs	
4418	Wheeler, William B	March	8, 1893	By examination	Council Bluffs	In Ok'ahoma.
4432	Wesner, Fred W.	April	8, 1893	By examination	Bloomfield	
4447	Wray, A. M.	May	2, 1893	By examination	Bloomfield	Kalona.

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
4468	Wendell, Ed.	June 6, 1886	By examination.	Smithland.		
4470	Weller, William	June 6, 1886	By examination.	Sigourney.		
4507	Woodruff, W. J.	August 31, 1886	By examination.	Foster.		
4517	Walker, George L.	September 6, 1886	By examination.	Ottumwa.		
4522	Wilson, Dr. George W.	September 28, 1886	By examination.	Montezuma.		
4538	Whelhan, J. Frank	November 8, 1886	Graduate	Cedar Rapids.		
4551	Womeldorf, John M.	December 5, 1886	By examination.	Fayette.	Hartley.	
4565	Will, Edw. C.	January 20, 1887	By examination.	Marshalltown.		
4567	Walrod, T. S.	December 20, 1886	By examination.	De Witt.		
4622	Williams, A. H.	April 3, 1887	By examination.	Mt. Pleasant.		
4640	Wilkins, J. S.	April 3, 1887	By examination.	New Hampton.		
4666	West, Jesse A.	June 5, 1887	By examination.	Greenfield.	Creston.	
4661	Williams, Ed. E.	June 5, 1887	By examination.	Odebolt.	Reasnor.	In Wyoming.
4686	Walsh, Count B.	June 5, 1887	By examination.	Hescon.		
4670	Williams, J. R.	June 5, 1887	By examination.	Larchwood.		
4688	Wiltz, J. H.	July 3, 1887	By examination.	Pomeroy.		
4686	Watts, J. F.	July 3, 1887	By examination.	Ruthven.	Plainfield.	
4708	Wilson, W. E.	August 7, 1887	By examination.	Waterloo.		
4770	Wise, P. A.	November 17, 1887	By examination.	Cedar Falls.		
4774	Worden, Harry E.	November 17, 1887	By examination.	Monroe.	Klerlin.	
4806	Williams, S. H.	January 23, 1888	By examination.	Estherville.		
4821	Westveer, Abraham M.	February 5, 1888	By examination.	Eagle Grove.	Lake City.	
4860	Wesmer, Alvin E.	March 23, 1888	By examination.	Sheldon.	Larchwood.	
4866	Walrod, Guy L.	March 23, 1888	By examination.	Ft. Dodge.	Barnum.	
4867	Williams, F. A.	April 2, 1888	By examination.	Hopkinton.		
4884	Wilson, Nellie C.	June 2, 1888	By examination.	Jesup.		
4897	Walters, C. M. C.	July 2, 1888	By examination.	Bancroft.		
4924	Walters, A. J.	August 2, 1888	By examination.	Sigourney.	Centerville.	
4930	Wilson, E. M.	September 2, 1888	By examination.	Bloomfield.	Des Moines.	
4930	Wilson, E.	September 2, 1888	By examination.	Ruthven.	Greenville.	
5003	Wright, C. W.	April 4, 1889	By examination.	New Hampton.		
5023	Wilson, F. D.	February 10, 1889	By examination.	Scranton.	Malvern.	
5024	Wood, H. L.	March 6, 1889	By examination.	Eagle Grove.	Woodsstock.	
5036	Wunderlich, F. H.	March 6, 1889	By examination.	Dubuque.		
5103	Winnas, L. J.	April 7, 1889	By examination.	Wilton.	Slaters.	
5110	Wentzel, C. J.	July 7, 1889	By examination.	Colfax.		
5119	Walzenegger, J. G.	August 4, 1889	By examination.	Burlington.		

In New Mexico.

5136	Wanberg, G. E.	September	1, 1896	By examination.	Barter.	Whittier.
5171	Walters, D. J.	December	1, 1896	By examination.	Hudson.	Pringhar.
5207	Watters, W. L.	February	1, 1897	By examination.	Atalissa.	Wellman.
5231	Wangler, C. J.	March	16, 1897	By examination.	Waterloo.	
5232	Wade, Abigail D.	April	7, 1897	Graduate.	Clarinda.	
5250	Wagner, Max R.	April	7, 1897	By examination.	Wayley.	Westchester.
5276	Wahlstrom, J. A.	June	1, 1897	By examination.	Fonda.	Marathon.
5277	Walsh, O. M.	June	1, 1897	By examination.	Delta.	Monroe.
5341	Waise, Rudolph	October	5, 1897	By examination.	Manning.	Tabor.
5342	Woolman, H. H.	October	5, 1897	By examination.	Grissold.	
5348	Wilwerding, J. M.	October	5, 1897	By examination.	Hull.	Inwood.
5346	Watson, J. C.	November	9, 1897	By examination.	Waterloo.	Beaman.
5348	Wenham, F. E.	November	9, 1897	By examination.	Dea Moines.	
5390	Weeks, Carl.	May	7, 1897	By examination.	De Boto.	
5370	Wright, C. M.	December	7, 1897	By examination.	New Market.	Lorimer.
5375	Walker, O. G.	January	1, 1898	By examination.	New Virginia.	Shellsburg.
5395	Wilson, James A.	February	1, 1898	By examination.	Mechanicsville.	
5449	Welch, James.	April	5, 1898	By examination.	Waterloo.	Loveland.
5451	Witt, E. F.	April	5, 1898	By examination.	Clarinda.	
5452	Williams, C. H.	April	5, 1898	By examination.	Hubbard.	Oakalosa.
5455	Winter, P.	April	5, 1898	By examination.	Crawfordsville.	Quasqueton.
5457	White, L. M.	April	5, 1898	Graduate.	Maynard.	Milford.
5464	Weldin, C. D.	April	8, 1898	By examination.	La Verne.	McIntyre.
5494	Wolfe, W. H.	May	8, 1898	By examination.	Manchester.	Wellman.
5517	Ward, W. H.	May	8, 1898	By examination.	Iowa City.	
5506	Ward, J. J.	July	27, 1898	By examination.	Mt. Pleasant.	
5547	Wagh, H. T.	November	1, 1898	By examination.	Bloomfield.	Frederville.
5568	Welch, A. B.	March	7, 1899	By examination.	Waterloo.	Rock Rapids.
5568	Williams, A. I.	April	4, 1899	Graduate.	Bristol.	Grissold.
5568	Webber, B. D.	May	17, 1899	Graduate.	Pella.	
5565	Wagner, E. O.	May	2, 1899	By examination.	Ridgeway.	
5565	Wenmar, J. L.	May	2, 1899	By examination.	Bloomfield.	Sully.
5741	Wray, J. A.	July	6, 1899	Graduate.	Des Moines.	Stour City.
5755	Wohlgenuth, J. G.	August	1, 1899	Graduate.	Burlington.	Oceola.
5762	Wilson, J. M.	August	1, 1899	Graduate.	Council Bluffs.	
5773	Warta, J. A.	August	1, 1899	Graduate.	Le Mars.	
5784	Wernli, L. S.	June	6, 1899	By examination.	Des Moines.	Britt.
5794	Wood, Rupers Vincent.	September	6, 1899	Graduate.	Keokuk.	St. Louis, Mo.
5795	Williams, N. Emery	September	6, 1899	By examination.	Ottumwa.	St. Louis, Mo.
5812	Walker, Charles C.	September	6, 1899	By examination.	Marathon.	Mt. Pleasant.
5918	Wagner, J. A.	September	6, 1899	By examination.	Rt. Dodge.	Cartersville.
5953	Welch, W. Richard	November	9, 1899	By examination.	Germania.	
5953	Wand, Thomas S., Jr.	November	9, 1899	Graduate.	Charles City.	Chicago, Ill.
5985	Waite, Raymond G.	January	2, 1900	Graduate.	Toronto.	
5987	Williams, Harry H.	January	2, 1900	By examination.	Des Moines.	
5986	Wheeler, Harry A.	January	2, 1900	By examination.	Des Moines.	
5906	Wick, Knell D.	February	6, 1900	By examination.	Moorhead.	Waterloo.
5907	West, A. A.	February	6, 1900	Graduate.	Rode.	
5923	Watson, E. L.	February	6, 1900	Graduate.	Cambridge.	
5953	Wiese, William H.	March	6, 1900	Graduate.		Huxley
						In California.
						In Nebraska.
						In Indiana.
						In Oklahoma.
						In S. Dakota.

ABSTRACT—CONTINUED.

Number of cer- tificate.	NAME.	DATE OF REGISTRA- TION.	HOW REGISTERED.	PLACE OF REGISTRA- TION.	LATEST REPORTED ADDRESS.	REMARKS.
5957	White, F. A.	March 6, 1900	By examination.	Katherville.	Bradgate.	In Colorado.
5958	Wilson, A. W.	March 6, 1900	By examination.	Pioneer.	.....	.....
5959	Whitmore, George C.	April 3, 1900	By examination.	Avoca.	.....	.....
5960	Wendt, Charles C.	April 3, 1900	By examination.	Bellevue.	Shannon City.	.....
5961	White, M. P.	May 1, 1900	Graduate.	Diagonal.	Marathon.	.....
5962	Wise, Harley Louis.	May 1, 1900	Graduate.	Milford.	.....	.....
6017	Wright, Elmer E.	May 1, 1900	By examination.	Dubuque.	In Oklahoma.	.....
6048	Winfrey, F. M.	May 5, 1900	By examination.	Bloomfield.	.....	.....
6071	Welty, C. H.	July 10, 1900	By examination.	Hampton.	.....	In Wyoming.
6084	Williamson, Harry V.	August 7, 1900	Graduate.	Des Moines.	.....	In Missouri.
6100	Woodward, L. W.	August 7, 1900	Graduate.	Des Moines.	.....	.....
6106	White, Mark.	August 7, 1900	By examination.	Mason City.	.....	.....
6118	Woodcock, George C.	September 4, 1900	Graduate.	Valley Junction.	.....	.....
6128	Whitmer, E. S.	September 4, 1900	Graduate.	Des Moines.	Greenfield.	.....
6178	Wilson, Nathan B.	November 8, 1900	By examination.	Des Moines.	Monroe, Wia.	.....
6196	Wilson, E. E.	December 4, 1900	By examination.	Tipton.	Rhodes.	.....
6202	Wallick, C. N.	December 4, 1900	Graduate.	Council Bluffs.	Pisgah.	.....
6219	Willan, L.	February 6, 1901	Graduate.	Des Moines.	Chicago, Ill.	.....
6222	Warren, Ois W.	May 2, 1901	Graduate.	Dubuque.	Woolstock.	.....
6342	Walker, William H.	July 2, 1901	Graduate.	Clarion.	.....	In Illinois.
6381	Wallace, T. J.	August 6, 1901	Graduate.	Des Moines.	.....	.....
6383	Wekesser, H. P.	August 6, 1901	By examination.	Irwin.	.....	.....
6430	Watters, S. H.	August 8, 1901	Graduate.	Waterloo.	.....	.....
6446	Winsett, C. V.	September 1, 1901	Graduate.	Council Bluffs.	Mt. Pleasant.	.....
6450	Wager, H. A.	September 1, 1901	Graduate.	Des Moines.	Dowa.	.....
6454	Wood, O. R.	September 1, 1901	Graduate.	Des Moines.	North English.	In Oklahoma.
6472	Williams, L. W.	November 8, 1901	Graduate.	Des Moines.	.....	.....
6496	Wagner, Jas. A.	December 8, 1901	Graduate.	Mitchellville.	Gowrie.	In Utah.
6518	Wilson, S. G.	January 4, 1902	By examination.	Paton.	.....	.....
6538	Wise, Chas.	January 4, 1902	By examination.	Knoxville.	.....	.....
6551	Wright, Ed. F.	February 4, 1902	By examination.	Oskaloosa.	Alexander.	.....
6571	Williamson, A. J.	March 4, 1902	By examination.	Webster City.	.....	.....
6581	Whiteman, H. E.	March 4, 1902	By examination.	Gowrie.	Albert City.	.....
6595	Werner, C. A. A.	March 4, 1902	Graduate.	.....	.....	.....
6599	Wardford, D. M.	March 4, 1902	By examination.	Aplington.	.....	.....

6680	Walters, O. O.	April	1, 1902	By examination.	Schleswig.	.....	.....	In Colorado.
6646	Williams, H. F.	April	1, 1902	By examination.	Clinton	.....	.....	In Illinois.
6688	Williams, Will.	April	22, 1902	Graduate	Ackley	.....	Varina.	In Illinois.
6689	Wales, Fred E.	May	6, 1902	By examination.	Des Moines.	.....	.....	In Minnesota.
6696	Wallack, B. S.	June	3, 1902	Graduate	Mitchellville	.....	Elkhart.	In Minnesota.
6788	Wilson, R. C.	August	4, 1902	Graduate	Des Moines.	.....	.....	In Oklahoma.
6789	Weeks, W. H.	August	5, 1902	Graduate	Atlantic.	.....	.....	In S. Dakota.
6790	Weykoff, J. G.	August	5, 1902	Graduate	Des Moines.	.....	.....	.....
6791	Wolfe, H. E.	August	5, 1902	Graduate	Stour City.	.....	.....	.....
6792	Wettergreen, E.	August	5, 1902	By examination.	Solon.	.....	Stour City.	.....
6810	Williams, H. E.	August	5, 1902	By examination.	Whiting	.....	Dows.	.....
6811	Wilhelm, G. O.	August	5, 1902	Graduate	Kellerton	.....	.....	.....
6824	Watson, W. S.	August	21, 1902	Graduate	Des Moines.	.....	.....	.....
6833	Wetherell, Pearl	October	7, 1902	Graduate	Davenport.	.....	.....	In N. Dakota.
6854	Weber, J. S.	October	7, 1902	Graduate	Des Moines.	.....	Foster.	In Illinois.
6855	Wenger, E. J.	October	7, 1902	Graduate	Avery	.....	.....	.....
6856	Williams, I. T.	October	7, 1902	Graduate	Adel	.....	.....	.....
6859	Worley, G. W.	October	7, 1902	Graduate	Davenport.	.....	Winthrop.	.....
6860	Welchman, Mary M.	September	10, 1902	By examination.	Missouri Valley.	.....	.....	.....
6884	Wingate, C. S.	November	6, 1902	Graduate	Wabourne.	.....	.....	.....
6911	Wallace, L. J.	December	2, 1902	By examination.	Hampton.	.....	.....	.....
6900	Watts, J. C.	February	2, 1903	By examination.	Columbus Junction.	.....	.....	.....
6901	Wilcox, F. O.	February	2, 1903	By examination.	Columbus Junction.	.....	.....	.....
6982	Willey, Frank	February	2, 1903	By examination.	Delmar.	.....	.....	.....
6983	Weston, N. T.	February	2, 1903	Graduate	Des Moines.	.....	.....	In Illinois.
6972	Wicks, J. H.	March	22, 1903	Graduate	Des Moines.	.....	.....	In Arkansas.
7008	Wertz, O. S.	April	22, 1903	Graduate	Des Moines.	.....	.....	.....
7009	Wilson, W. F.	April	22, 1903	Graduate	Manon.	.....	.....	.....
855	Young, B. F.	June	1, 1903	As owner	Danbury.	.....	Correctionville.	.....
8608	Yockey, C. C.	November	16, 1903	By examination.	Newburn.	.....	Chariton.	.....
2982	Yockey, C. C.	January	16, 1903	By examination.	Rudon.	.....	Omaha.	.....
4002	Yates, A. L.	January	18, 1901	By examination.	.....	.....	.....	.....
4008	Yates, E. M.	March	24, 1901	By examination.	.....	.....	.....	.....
4088	Young, Charles O.	February	6, 1903	By examination.	Maquokette	.....	Laurens.	.....
4182	Young, John	February	6, 1903	By examination.	Stour City.	.....	.....	.....
4767	Young, E. M.	November	6, 1902	By examination.	Shellsburg.	.....	.....	.....
4882	Young, E. M.	March	5, 1903	By examination.	.....	.....	.....	.....
4958	Yager, Charles W.	April	9, 1903	By examination.	Leona.	.....	Rockford.	.....
5410	Young, L. H.	March	7, 1903	By examination.	Des Moines.	.....	.....	In Colorado.
6091	Yocman, J. Victor	August	5, 1901	Graduate	Macon.	.....	Albert City.	.....
6234	Young, C. W.	March	5, 1901	By examination.	Colwell.	.....	Sumner.	.....
6865	Young, C. B.	April	5, 1901	By examination.	Bloomfield.	.....	.....	.....
6868	York, T. E.	July	5, 1902	Graduate	Des Moines.	.....	Grundy Center.	.....
6795	Young, Charles E.	August	25, 1902	By examination.	Mesoy.	.....	.....	.....
7647	Zeisig, Charles A.	August	25, 1902	As owner	Eagle Grove.	.....	.....	In Illinois.
4435	Zeisig, H. L.	March	25, 1903	By examination.	Sioux Rapids.	.....	.....	.....
5464	Zinsler, E. W.	April	6, 1900	Graduate	Debuque.	.....	.....	.....
5718	Zilling, J. A., Jr.	July	4, 1900	By examination.	Gerry.	.....	.....	.....
6180	Zimmerman, Chas. F.	September	4, 1901	By examination.	Buffalo Center.	.....	Garner.	.....
6855	Zeiger, Frank W.	July	9, 1901	By examination.	.....	.....	.....	.....

ABSTRACT—CONTINUED.

Number of certificate.	NAME.	DATE OF REGISTRATION.	HOW REGISTERED.	PLACE OF REGISTRATION.	LATEST REPORTED ADDRESS.	REMARKS.
6447	Zimmerman, J. J.	October 1, 1901	Graduate	Chapin	Bristow.	In Illinois.
6519	Zak, J. J.	January 6, 1902	Graduate	Pocahontas	Pocahontas.	
6640	Zimmerman, W. J.	April 1, 1902	By examination	Gowrie		

REGISTERED PHARMACISTS, BY COUNTIES.

ADAIR.

5962 Adams, Hicks L.....	Fontanelle	6201 Masten, D. L.....	Greenfield
4241 Calkins, H. G.....	Adair	4941 McDermid, Pierre.....	Fontanelle
4258 Culverson, F. P.....	Greenfield	2478 McClintock, J. M.....	Adair
3991 Dodson, W. F.....	Greenfield	5520 McEvoy, M. T.....	Adair
3030 Graft, Geo. L.....	Greenfield	5499 Pote, G. J.....	Bridgewater
5206 Harper, J. A., Jr.....	Greenfield	5872 Powell, Preston.....	Adair
4931 Heath, Lawrence.....	Bridgewater	6569 Powell, Richard.....	Adair
3943 Herbert, Frank.....	Bridgewater	1141 Scott, C. B.....	Fontanelle
5997 Howland, Pearl L.....	Nodaway	8432 Stoll, W. W.....	Fontanelle
5540 Jarvis, C. B.....	Blockton	4935 Trumbull, L.....	Adair
1921 Knapp, C. D.....	Greenfield	5107 Trumbull, Mrs. I. F.....	Adair
4370 Kingery, J. F.....	Orient	5772 Woodward, H. H.....	Adair
4046 Leach, J. A.....	Greenfield		

ADAMS.

498 Booth, A. E.....	Prescott	1714 Peregrine, J. S.....	Brooks
2126 Coakley, J. W.....	Mt. Etna	4458 Potter, F. A.....	Corning
3078 Henry, Charles.....	Corning	1476 Sweet, H. L.....	Mt. Etna
5235 Harris, H. H.....	Corning	2480 Salts, A. J.....	Corning
5997 Howland, Pearl L.....	Nodaway	3355 Snelson, Lulu.....	Fontanelle
4751 Jackson, M. L.....	Carbon	4232 Shinn, A. F.....	Corning
4097 McClure, Mamie O.....	Corning	6879 Sears, H. B.....	Corning

ALLAMAKEE.

5986 Ackerman, J. O.....	Lansing	2784 Natchwey, Theo.....	Lansing
1080 Douglass, R. N.....	Postville	6187 Natchwey, F. J.....	Lansing
8012 Earl, W. C.....	Waukon	6010 Opfer, John.....	Waukon
1555 Gilchrist, W. P.....	Waukon	8499 Pratt, A. E.....	Waukon
4072 Grimm, A. L.....	Waukon	1057 Staudt, A.....	Postville
6150 Keating, E. C.....	Waukon	1058 Staudt, G.....	Postville
753 Markley, G. H.....	Lansing	4450 Shumaker, C. M.....	Lansing
2779 Myers, S. C.....	Roseville	4381 Thoma, John M.....	Postville

APPANOOSE.

817 Blosser, Geo. W.....	Moulton	5573 Hays, W. S.....	Centerville
2454 Berry, W. F.....	Moulton	3795 Johnson, C. J.....	Centerville
5529 Beer, M. H.....	Centerville	4050 Kauffman, Adolph.....	Centerville
4030 Clark, J. W.....	Centerville	3797 Kennett, Elmer.....	Centerville
5095 Carr, O. G.....	Unionville	5567 Meyer, A. A.....	Centerville
6753 Davis, Eugene.....	Moravia	865 McCreary, W. M.....	Centerville
5441 Edwards, F. O.....	Moulton	5320 McCreary, W. B.....	Centerville
6971 Elgin, J. I.....	Centerville	6119 Orange, M. D.....	Centerville
2384 Forsyth, Robert.....	Mystic	2521 Powers, C. A.....	Moulton
4463 Forsyth, David B.....	Mystic	4802 Powers, J. H.....	Cincinnati
5967 Forsyth, D. R.....	Mystic	4643 Powers, E. A.....	Moulton
5377 Guinn, G. W.....	Centerville	6623 Peppers, C. H.....	Centerville
5914 Gale, W. I.....	Unionville	5439 Taylor, J. B.....	Centerville
5478 Gale, W. S.....	Moulton	3241 Willis, D. H.....	Moravia
6390 Gardner, C. L.....	Centerville	4924 Weller, A. J.....	Centerville
5918 Halden, J. W.....	Moravia	5860 Weeks, Carl.....	Centerville

AUDUBON.

3218 Bisom, C. L.....	Brayton	6350 Hansen, N.....	Audubon
5623 Branson, M. C.....	Audubon	4912 Mertz, C. E.....	Gray
6596 Bailey, O. F.....	Audubon	6323 Merwin, A. O.....	Audubon
173 Cloughly, Wm.....	Audubon	6548 Parker, B. R.....	Burnside
6183 Cockerill, R. F.....	Exira	289 Roberts, A. H.....	Audubon
5918 Doffing, Nick.....	Exira	1344 Rippey, L.....	Audubon
5905 Franklin, F. H.....	Brayton	3234 Riggs, J. A.....	Audubon
5980 Griffith, J. E.....	Audubon	6425 Roberts, R. P.....	Audubon
3061 Houston, C. W.....	Exira	5925 Smith, F. W.....	Audubon
4236 Hamler, W. A.....	Exira	6375 Slamberg, Lorenz.....	Kimballton

BENTON.

2662 Adams, J. R.	Vinton	3257 Paul, B. F.	Blairtown
1285 Brubaker, J. S.	Vinton	5785 Paden, C. M.	Belle Plaine
2581 Bielenberg, J. R.	Keystone	6455 Rousher, J. O.	Belle Plaine
8161 Brubaker, C. W.	Vinton	518 Springer, J. T.	Norway
4233 Bille, John	Mt. Auburn	1888 Speers, G. W.	Vinton
4561 Bell, P. H.	Van Horn	5044 Swallum, H. U.	Belle Plaine
6578 Brooks, G. A.	Vinton	5393 Speers, J. O.	Vinton
6610 Barkdoll, B. E.	Van Horn	5543 Sparling, E. E.	Belle Plaine
6238 Challed, C. W.	Norway	6618 Strong, H. L.	Vinton
6964 Carr, E. E.	Newhall	6909 Shannon, R. L.	Shellsburg
3291 Dingman, G. W., Jr.	Urbana	5192 Tiedale, W. H.	Mt. Auburn
5903 Gilmore, H. N.	Vinton	5488 Tague, Marion L.	Urbana
1280 Hopwood, A. L.	Vinton	4616 Ullum, S. A.	Vinton
4974 Heiden, L. F.	Garrison	294 Van Meter, J. G.	Belle Plaine
6581 Herejk, W. J., Jr.	Belle Plaine	3301 Vincent, W. A.	Belle Plaine
8900 LaGrange, T. G.	Vinton	3842 Wirth, Cyrillus	Van Horn
4321 McCorkle, G. E.	Shellsburg	5449 Welch, Jas.	Benton
295 Nichols, Edw.	Belle Plaine	4882 Young, E. M.	Shellsburg
1288 Palmer, W. S.	Vinton		

BLACK HAWK.

8556 Blanchaine, H. J.	Laporte	5089 Marshall, O. E.	Waterloo
5820 Bitner, C. W.	Waterloo	6899 Mornin, E. F.	Cedar Falls
5797 Brinton, G. E.	Laporte	5149 McDermott, C. L.	Waterloo
6092 Bondinot, J. E.	Waterloo	5174 Martin, T. J.	Waterloo
6147 Brawly, C. F.	Waterloo	5304 Magee, E. W.	Dunkerton
1405 Cummings, M. L.	Laporte	6440 McKinney, W. N.	Laporte
5096 Conger, H. G.	Laporte	5349 Miller, C. J.	Waterloo
5498 Carney, E. E.	Cedar Falls	5090 Oard, A. W.	Cedar Falls
6474 Clausen, C. N.	Waterloo	3398 Praefter, H. J.	Cedar Falls
6797 Cooley, W. H.	Waterloo	3897 Praefter, F. A.	Cedar Falls
1341 Forry, W. W.	Waterloo	5363 Pinkerton, F. G.	Waterloo
6835 Ferris, H. J.	Waterloo	5200 Rodamar, Albert	Waterloo
4486 Guthrie, F. L.	Cedar Falls	2398 School, August	Waterloo
6280 Gates, R. H.	Waterloo	3137 Slusher, J. M.	Hudson
8977 Henderson, J. L.	Waterloo	3534 Striegel, Bernard	Waterloo
3396 Henderson, C. B.	Waterloo	6526 Straggy, J. Q. A.	Waterloo
4576 Hieber, L. O.	Cedar Falls	6572 Strayer, W. G.	Hudson
4720 Henderson, H. H.	Waterloo	8930 Turner, G. A.	Waterloo
5549 Hieber, Ben.	Cedar Falls	5236 Todd, J. A.	Waterloo
5591 Hieber, H. B.	Cedar Falls	5737 Talty, N. A.	Waterloo
2042 Joder, J. E.	Waterloo	6266 Toneygan, R. A.	Waterloo
3982 Joder, A. T.	Hudson	404 Wise, C. A.	Cedar Falls
6796 Johnson, W. E.	Waterloo	1538 Wangler, C. D.	Waterloo
2515 Knapp, J. J.	Waterloo	1899 Wangler, R. C.	Waterloo
4196 Keefe, M. J.	Waterloo	2064 Wood, D. L.	Waterloo
4291 Landgraf, F. J.	Waterloo	5908 Wise, C. H.	Cedar Falls
2751 Mornin, G. S.	Cedar Falls	4298 Wangler, J. P.	Waterloo
3896 Mullarky, W. G.	Cedar Falls	4770 Wise, P. A.	Cedar Falls
4199 McGaheran, J. C.	Laporte	5231 Wangler, C. J.	Waterloo
4716 Mazanti, Henry	Cedar Falls	5451 Witt, E. F.	Waterloo

BOONE.

233 Anderson, A. A.	Boone	6517 Hartman, P. V.	Frazer
5881 Anderson, Swan.	Ogden	2396 Ingersoll, R. B.	Boone
5355 Clark, C. B.	Ogden	4559 Ingersoll, J. B.	Boone
6882 Cooper, C. T. S.	Ogden	5619 Jenkins, W. J.	Madrid
6798 Clark, S. P.	Ogden	5179 Kunst, Julius	Ogden
889 Dawkins, B. J.	Mineral Ridge	6767 Keasby, G. M.	Boone
5123 Dalander, E. P.	Madrid	6084 Legro, S. W.	Boone
5470 Druet, A. L.	Boone	915 Mallory, Dwight	Boonesboro
6978 Dalander, Z. W.	Madrid	916 Mallory, Adel	Boonesboro
6331 Dolain, J. O.	New Hartford	4331 McMechan, James	Boone
4587 Elliott, Geo. F.	Boone	6108 Munson, Chas. H.	Boone
1855 Fitzgerald, Maurice	Boone	4923 Peo, Evalene	Boone
9053 Farr, H. S.	Madrid	513 Springer, Jas. T.	Norway
8197 Gardner, A. J.	Ogden	3468 Sandell, C. A.	Boone
8108 Gore, Irwin	Pilot Mound	3568 Sturgeon, Q. A.	Madrid
4799 Graves, F. H.	Madrid	3682 Seilling, Ed. H.	Boone
5104 Hamilton, William	Boone	3371 Thornblom, A. L.	Boone
4849 Hintz, L. W.	Boone	208 Welch, Geo. H.	Boone
6507 Haggin, O. F.	Bozholm		

BREMER.

1709 Arnold, Chas.	Waverly	4351 Converse, L. E.	Waverly
1691 Broadie, A. A.	Waverly	3393 Dunkelberg, E. E.	Tripoli
3708 Broadie, H. H.	Waverly	5393 Ferrand, L. A.	Sumner
5376 Bunn, A. I.	Janesville	3097 Guthrie, J. M.	Tripoli

BREMER—CONTINUED.

2068 Kauffman, E. J.	Waverly	4820 Shores, Geo. A.	Tripoli
4156 Koerberle, T. A.	Sumner	5579 Stevenson, Archie	Tripoli
5414 Liffiring, E. A.	Jamesville	4695 Watts, J. F.	Plainfield
6063 Lillibridge, C. B.	Waverly	6205 Young, O. B.	Sumner
4808 Stauffer, Will F.	Jamesville		

BUCHANAN.

6475 Asmus, F. B.	Independence	5509 Leytze, F. C.	Independence
1896 Bothwell, G. W.	Fairbank	5828 Lindsay, H. A.	Independence
3741 Bain, John	Brandon	6408 Lusby, E. W.	Independence
6136 Bain, W. W.	Brandon	1672 McEwen, Chas. A.	Independence
4479 Burrett, A. W.	Stanley	3438 May, John A.	Independence
6477 Barnett, J. T.	Independence	5592 McMullen, F. A.	Independence
6506 Brown, L. H.	Lamont	5747 Mackin, B. G.	Aurora
4969 Collins, E. E.	Winthrop	5761 McDonnell, W. A.	Independence
5577 Campbell, J. B.	Independence	5747 Mackin, B. G.	Independence
5672 Coy, M. C.	Hazelton	6111 Parker, G. L.	Independence
5844 Collins, M. J.	Fairbank	6259 Richards, G. L.	Lewis
5857 Davis, F. J.	Fairbank	8227 Ryan, J. B.	Winthrop
1967 Everett, F. G.	Fairbank	651 Sinale, George	Independence
5662 Eaton, C. L.	Lamont	2598 Stoddard, F. S.	Jesup
2315 Fox, Frank	Lamont	4787 Smith, W. A.	Winthrop
6186 Freed, T.	Jesup	6102 Strain, W. P.	Independence
6369 Farrell, Anna M.	Winthrop	656 Tabor, A. W.	Independence
6684 Higbee, U. G.	Fairbank	3945 Tipton, W. L.	Aurora
99 Hyde, M. J.	Brandon	4988 Tapper, W. J.	Rowley
661 Hovey, H. W.	Independence	2852 Wallace, A. H.	Independence
4085 Hoffman, G. W.	Lamont	4894 Wilson, Nellie, C.	Jesup
4327 Hongland, F. T.	Jesup	6911 Wallace, L. J.	Winthrop
1529 Kenyon, T. F.	Jesup	5427 White, L. M.	Quasqueton

BUENA VISTA.

4139 Burgett, W. Q.	Newell	4406 Moline, O. G.	Marathon
6745 Beinert, W. C.	Storm Lake	2568 Niemann, Theo.	Newell
2265 Cameron, C. E.	Alta	6297 Oleson, O. E.	Storm Lake
5425 Cone, E. R.	Sioux Rapids	4529 Quay, W. F.	Storm Lake
6296 Christensen, N. A.	Alta	4901 Roberts, Jos.	Linn Grove
6245 Gillham, W. B.	Albert City	3869 Skiff, W. C.	Storm Lake
5564 Hennig, A. F.	Newell	4908 Smith, R. B.	Sioux Rapids
2709 Hadden, D. E.	Alta	4914 Smith, E. E.	Sioux Rapids
4195 Harlen, O. O.	Storm Lake	6501 Steen, H. C.	Sioux Rapids
5098 Hannum, W. J.	Marathon	6873 Schmitz, Henry	Storm Lake
5919 Harris, Irving	Storm Lake	5172 Vogel, H. A.	Newell
1853 Johnston, L. M.	Storm Lake	5276 Wallstrom, J. A.	Marathon
4282 Johnson, H. A.	Sioux Rapids	6595 Werner, C. A. A.	Albert City
6210 Johnson, E. G.	Marathon	5998 Wise, H.	Marathon
3685 Lundvall, N. A.	Sioux Rapids	6234 Young, C. W.	Albert City
4620 Larson, Edw.	Alta	5464 Zinser, E. W.	Sioux Rapids

BUTLER.

2081 Barroughs, S. W.	Allison	5371 Kelly, M. J.	Parkersburg
2198 Barroughs, S. E.	Allison	6296 Lighty, J. E.	Kelsey
5308 Baker, L. E.	Greene	4617 Merner, B. C.	Allison
6642 Bird, L. R.	Parkersburg	6029 Miller, E. L.	Parkersburg
600 Cole, J. L.	Greene	4485 Olney, V. L.	Shell Rock
2974 Cole, G. T.	Greene	5184 Ordway, John C.	New Hartford
4485 Clark, G. N.	Parkersburg	5311 O'Neill, D. D.	Allison
6996 Crook, F. B.	Dumont	123 Rhoads, H. M.	Clarkeville
1584 Dumont, T. A.	Dumont	6808 Richards, W. R.	Bristow
5556 Fowle, Lloyd	Clarkeville	273 Smith, W. H.	Shell Rock
6104 Gross, A. G.	Parkersburg	5085 Shaffner, W. W.	Aplington
1071 Howenstein, W. M.	Parkersburg	6118 Slaughter, G. A.	Aredale
5463 Halloran, E. N.	Dumont	6589 Warford, D. M.	Aplington
6157 Holihan, R. T.	Dumont	8150 Wick, R. E.	New Hartford
6606 Hill, A. E.	Greene	6447 Zimmerman, J. J.	Bristow
6329 Iskel, L. H.	Parkersburg		

CALHOUN.

2895 Bullock, F. H.	Lake City	4352 Forrester, J. F.	Jolley
5503 Brody, J. B.	Lake City	5303 Flemming, P. W.	Manson
6749 Brock, L. H.	Rockwell City	3871 Hewa, R. H.	Rockwell City
2449 Crisinger, J. W.	Farmhamville	4754 Johnson, W. F.	Manson
2391 Cook, V. W.	Lake City	2475 Loser, A. B.	Lake City
4185 Carmichael, O. O.	Lohrville	5310 LeGore, J. F.	Lohrville
3786 Dean, A. F.	Rockwell City	5362 Langerak, E. M.	Lake City
6430 Dessel, F. W.	Lohrville	169 Mullan, M. F.	Pomeroy

CALHOUN—CONTINUED.

4255 Martin, D. T.....	Pomeroy	4900 Russell, Fred.....	Lake City
4718 Mullarky, H.....	Manson	4948 Richey, E. F.....	Somers
5071 Moore, C. J.....	Lohrville	5076 Swan, W. C.....	Yetter
5155 Mullarky, E. E.....	Manson	5907 Sell, A. R.....	Rockwell City
5687 Miller, W. C.....	Rockwell City	8588 Wiltz, J. H.....	Pomeroy
5923 Moore, H. C.....	Knierim	4774 Worden, H. E.....	Knierim
6361 McMickle, S. L.....	Yetter	4821 Westveer, A. M.....	Lake City
4007 Ritz, George.....	Rockwell City	885 Young, B. F.....	Manson

CARROLL.

6963 Armantrout, F. J.....	Carroll	6145 Mansby, W. A.....	Lanesboro
6968 Anderson, J. B.....	Manning	5904 Rettenmaier, F. J.....	Carroll
526 Beberger, G. T.....	Carroll	5239 Royer, J. D.....	Coon Rapids
5756 Corbett, J. H.....	Ralston	2302 Swennings, F. J.....	Manning
5863 Childs, G. S.....	Coon Rapids	8175 Scott, J. C.....	Carroll
5078 Downs, J. A.....	Glidden	5336 Sourness, W. E.....	Carroll
2818 Feenstra, J. B. H.....	Arcadia	4987 Smith, H. M.....	Glidden
5554 Grau, G. H.....	Manning	4127 Strunk, H. J.....	Templeton
525 Hutton, J. W.....	Carroll	5786 Scheildorf, W. D.....	Manning
2498 Jones, U. C.....	Breda	8688 Taintor, E. B.....	Carroll
4187 Lewis, J. A.....	Manning	3880 Toovey, F. A.....	Dedham
5020 Le Due, A. H.....	Breda	4496 Thurlimann, Edward.....	Carroll
2784 Moser, L. F.....	Manning	5341 Weise, Rudolph.....	Manning
5231 Maher, Frank.....	Arcadia		

CASS.

6593 Cramer, Ralph.....	Atlantic	2995 McClees, C. H.....	Marne
762 Davis, M. J.....	Lewis	4740 Major, C. W.....	Anita
3398 Davis, W. B.....	Lewis	272 Nichols, Jonathan.....	Atlantic
6249 Emmett, J. V.....	Atlantic	1229 Nichols, F. J.....	Atlantic
6905 Elbert, A. H.....	Griswold	627 Pipher, John.....	Griswold
8831 Fee, F. K.....	Massena	4020 Parsons, Miss E. S.....	Atlantic
4988 Franks, W. N.....	Atlantic	6259 Richardson, G. L.....	Lewis
5215 Fried, A. F.....	Atlantic	1968 Scarr, G. F.....	Cumberland
3121 Goss, J. S.....	Atlantic	3143 Snelson, William.....	Massena
6242 Greve, H.....	Marne	3891 Schlicting, E. A.....	Griswold
5378 Hansen, Chas.....	Atlantic	5181 Snelson, P. B.....	Massena
6664 Harris, J. P.....	Atlantic	5292 Schultz, George.....	Cumberland
1868 Jones, J. B.....	Atlantic	6379 Sears, H. B.....	Atlantic
4953 Jeffrey, F. D.....	Atlantic	6962 Schultz, S. R.....	Massena
3381 Kiehl, R. S.....	Anita	257 Wilkin, R. D.....	Atlantic
5923 Knudson, A. C.....	Atlantic	6343 Wilwerding, J. M.....	Griswold
232 Major, E. E.....	Anita	6790 Wyckoff, J. G.....	Atlantic
6438 Morris, C. L.....	Wiota		

CEDAR.

881 Blair, W. H.....	Clarence	5009 Hirschfeldt, Frank.....	Tipton
1990 Brotherlin, H. L.....	Tipton	3343 Jurgensen, P. H.....	Lowden
6022 Byrnes, V. W.....	Durant	6506 Kopp, F. F.....	Mechanicsville
6720 Beacom, G. M.....	Tipton	1192 Mather, William.....	Springdale
4176 Coveny, T. H.....	Mechanicsville	1188 Mather, Charles E.....	Springdale
4329 Curtis, H. M.....	West Branch	5120 Nordhaus, C. A.....	Stanwood
1762 Gould, C. E.....	Mechanicsville	5484 Park, O. G.....	Clarence
3322 Gill, B. A.....	West Branch	1295 Ross, W. P., Jr.....	Tipton
4205 Gregg, F. K.....	Tipton	3579 Ross, C. K.....	Tipton
4391 Etbeaut, H. E.....	Mechanicsville	386 Smith, G. E.....	Clarence
4412 Hoon, Grant.....	Tipton		

CERRO GORDO.

3822 Adams, J. W.....	Mason City	4704 Graves, Alva N.....	Rockwell
5748 Anderson, H. O.....	Ventura	597 Grubb, A. B.....	Mason City
6197 Anderson, S. C.....	Mason City	3640 Howland, G. W.....	Rockwell
955 Berney, C. C.....	Mason City	4284 Hughes, R. E.....	Swaledale
3059 Baas, L. F.....	Clear Lake	5129 Hintz, H. F.....	Plymouth
4041 Blaise, T. T.....	Mason City	6311 Halloran, T. C.....	Mason City
4414 Bauman, Robert.....	Meservey	5025 Kuchemann, B. F.....	Meservey
4542 Burns, C. E.....	Mason City	5427 Killmer, A. J.....	Mason City
6064 Berney, Emma H.....	Mason City	344 Mills, J. S.....	Mason City
4894 Buttz, W. L.....	Mason City	5835 Michael, F. L.....	Mason City
4384 Catlin, F. S.....	Mason City	5127 Muesse, F. W.....	Clear Lake
5461 Cragg, G. W.....	Mason City	2273 Nicol, Ira I.....	Mason City
4636 Dick, O. K.....	Rockwell	5822 Ryan, T. O.....	Daugherty
6076 Dexheimer, F. R.....	Mason City	8598 Robinson, C. E.....	Clear Lake
820 Eitzel, J. L.....	Clear Lake	5228 Rosemond, W. H.....	Clear Lake
944 Emery, J. L.....	Mason City	1893 Stewart, C. M. C.....	Mason City

OERRO GORDO—CONTINUED.

8778 Spohr, A. G.....	Mason City	6787 Torgerson, Thomas.....	Mason City
6006 Stanbury, H. E.....	Rockwell	4841 Waterbury, M. O.....	Mason City
6283 Savre, G. S.....	Thornton	5818 Wagner, J. A.....	Cartersville
6910 Seney, Roy.....	Mason City	5806 Wick, R. D.....	Ventura
5081 Tiss, G. J.....	Mason City	6106 White, Mark.....	Mason City
6049 Taggart, H. W.....	Mason City		

CHEROKEE.

4485 Allen, C. E.....	Marcus	6582 Jones, M. J.....	Marcus
5896 Adams, E. H.....	Larrabee	6420 Miller, W. H., Jr.....	Washta
2649 Banks, E. E.....	Cherokee	5816 Nelson, J. C.....	Aurelia
5897 Blair, C. A.....	Cherokee	4881 Quinn, C. F.....	Meriden
4880 Bundy, Edgar.....	Aurelia	4092 Rogers, U. C.....	Washta
5791 Cronin, D. J.....	Washta	8274 Shaul, A. J.....	Quinby
4462 Fry, W. N.....	Marcus	8308 Schuster, H. J.....	Cherokee
3805 Georges, A. G.....	Marcus	8908 Shea, M. J.....	Cleghorn
5299 Gerlach, Richard.....	Cherokee	5156 Schuster, G. W.....	Cherokee
5622 Jensen, F. W.....	Washta	5598 Snyder, C. J.....	Aurelia

CHICKASAW.

940 Briggs, L. L.....	New Hampton	8720 Moody, C. B.....	Ionia
3624 Blinn, F. W.....	Nashua	6848 McMullen, G. W.....	New Hampton
5406 Buck, E. M.....	Fredericksburg	951 Olmsted, E. N.....	New Hampton
6228 Ferrand, E. E.....	Fredericksburg	8511 Taylor, L. M.....	Fredericksburg
3811 Gardner, H. W.....	New Hampton	6182 Schultz, G. F.....	Nashua
6241 Gitzendonner, Herman.....	New Hampton	1957 Woodbridge, M. L.....	Nashua
5481 Kendall, R. W.....	Fredericksburg	4840 Wilkins, J. S.....	New Hampton
3288 Landon, J. E.....	Lawler		

CLARKE.

4227 Ash, A. S.....	Osceola	8194 Landis, Jesse E.....	Osceola
2481 Blythe, Calvin.....	Woodburn	8896 London, L. W.....	Osceola
8778 Bollbaugh, W. R.....	O-ceola	4771 Landis, S. E.....	Osceola
5797 Doolittle, H. M.....	Murray	6985 Lee, R. E.....	Woodburn
810 Garretson, B. F.....	Osceola	2128 Martin, M. T.....	Woodburn
5284 Grigg, N. F.....	Murray	2892 Miller, E. L.....	Murray
6515 Gammil, Willard.....	Osceola	6149 Persels, B. R.....	Osceola
6499 Harlan, S. D.....	Osceola	5352 Trent, W. W.....	Woodburn
6594 Jones, J. C.....	Osceola	4216 Whitlock, C. E.....	Osceola
847 Landis, S. L.....	Osceola	5761 Wilson, James M.....	Osceola
2641 Lawrence, Edw.....	Osceola		

CLAY.

3998 Bender, George B.....	Spencer	5554 Hall, C. E.....	Everly
6106 Benthall, Eugene.....	Royal	5465 Johnson, Geo. J.....	Peterson
5140 Bjornstad, O. A.....	Spencer	6802 Larson, A. W.....	Peterson
5945 Bradgate, F. L.....	Spencer	6189 McCall, C. A.....	Spencer
6128 Brongman, Emil.....	Everly	4089 Ney, R. J.....	Webb
6184 Billings, C. S.....	Spencer	5798 Reynolds, A. E.....	Fostoria
6779 Bender, F. L.....	Spencer	4147 Tyler, M. G.....	Royal
3738 Cottrell, G. B.....	Spencer	8184 Williams, J. I.....	Peterson
4557 Cooper, G. E.....	Peterson	4909 Wilson, E. J.....	Greenville
3011 Dickey, E. L.....	Spencer		

CLAYTON.

547 Bayles, F. B.....	Elkader	4822 Jones, W.....	Volga City
1557 Bixby, R. J.....	Edgewood	908 Kennedy, M. G.....	McGregor
1588 Blanchard, Lewis.....	Edgewood	2167 Kuenzel, H. C.....	Garnaville
4024 Becker, William.....	Elkader	8145 Kriebs, George.....	Elkport
4251 Bliss, G. W.....	McGregor	3768 Kramer, Charles F.....	McGregor
5045 Ballentine, W. A.....	Monona	5501 Kriebs, F. D.....	Edgewood
5079 Barnes, L. M.....	Strawberry Point	6839 Maers, J. A.....	Monona
5516 Becker, Caroline M.....	Elkader	1994 Newman, M. M.....	Edgewood
4288 Fox, H. C.....	Monona	4858 Oehring, C. C.....	Elkader
3760 Graham, R. D.....	Strawberry Point	523 Plumb, E. B.....	McGregor
548 Hagenaick, H. H.....	Elkader	838 Peterson, S. J.....	McGregor
2493 Hoag, E. H.....	Strawberry Point	4117 Royden, F. W.....	Edgewood
8190 Heine, W. H.....	Guttenberg	5467 Schroeder, R. E.....	Guttenberg
4264 Henry, J. W.....	Strawberry Point	6776 Stemmer, Chas. F.....	Strawberry Point
5214 Henry, A. L.....	Strawberry Point	1857 White, W. P.....	Volga City
6946 Harr, H. McB.....	Strawberry Point		

CLINTON.

5188 Beard, A. R.	De Witt	5714 Linblade, H. E.	Clinton
5844 Boyd, J. C.	Clinton	5727 Muesse, F. W.	Clinton
5981 Blodt, J. J.	Clinton	188 McKenzle, H. M.	Elwood
8484 Cunningham, T. C.	Clinton	189 McKenzle, Emma.	Elwood
6285 Campbell, H. P.	Clinton	4180 Moffet, Ben J.	Clinton
5173 DeLange, James.	Clinton	4452 McMeel, E. C.	Delmar
6556 Desmond, W. J.	Clinton	4900 McMeel, J. H.	Lost Nation
4880 Evans, J. W.	Clinton	5176 Manion, P. H.	Charlotte
1880 Gamble, T. D.	Wheatland	5559 Mathiesen, J. O.	Clinton
862 Houston, G. W.	Clinton	5853 Mitchell, J. H.	Lyons
2417 Houston, J. T.	Clinton	5898 Nyquist, John.	Clinton
8756 Hunt, Hemer.	Camarache	374 Olney, A. R.	Clinton
8845 Hill, O. E.	Clinton	1962 Rud, Chas. C.	Lyons
4204 Kenning, W. E.	Clinton	3248 Roff, H. J.	Lyons
4654 Holmes, Eva R.	Clinton	2280 Schenk, G. W.	Lyons
6156 Harrington, L. D.	Grand Mound	2870 Sturgis, N. F.	Clinton
2722 John, M. H.	Clinton	5399 Skelley, P. B.	Lost Nation
5979 Jones, E. H.	Clinton	6063 Shaw, J. A.	Clinton
8545 Kent, C. F.	De Witt	40 Webb, J. R.	De Witt
1701 Langheim, J. M.	Charlotte	415 Walker, S. B.	Calamus
5132 Ludolph, H. W.	Clinton	4507 Walrod, Truma S.	De Witt

CRAWFORD.

8281 Burk, Jas. F.	Denison	5582 Kniet, L. E.	Denison
5971 Bowney, A. F.	Buck Grove	6288 Knipe, J. B.	Charter Oak
4675 Cassady, L. M.	Denison	3916 Lies, M. E.	Denison
8062 Dyer, H. W.	Charter Oak	6397 Lindsay, H. H.	Kiron
5285 Davis, G. H.	Dow City	4242 McGarvey, S. B.	West Side
1781 Evans, W. B.	Arion	3249 McWilliams, J. J.	Charter Oak
2456 Gardner, J. B.	Manilla	6281 Patterson, O. L.	West Side
5948 Gause, E. F.	Manilla	2388 Richardson, C. B.	Denison
5681 Harrison, J. J.	West Side	8256 Roberts, F. J.	Charter Oak
5526 Hoyt, A. L.	Dows	3900 Ryan, Milo.	Vail
1798 Knaul, Rudolph.	Denison	5218 Saunders, H. A.	Manilla
3399 King, E. R.	Arion	5608 Strauser, M. F.	Manilla
8837 Kinyon, L. W.	Vail	6680 Walters, C. C.	Schleswig

DALLAS.

5349 Anderson, A. G.	Redfield	6401 O'Malley, W. P.	Perry
5770 Basart, C. E.	Minburn	3784 Patter, J. M.	Woodward
5400 Fuller, N. H.	Perry	4845 Pettit, L. N.	Dallas Center
1838 Brookings, V. J.	Woodward	487 Richmond, J. A.	Dallas Center
6310 Brolsma, J. G.	Woodward	456 Stanley, J. D.	Dexter
6069 Carstensen, O. L.	Perry	2753 Simcoke, J. L.	Adel
6318 Coakley, J. B.	Perry	4247 Seidler, Wm.	Minburn
2963 Draper, J. S.	Perry	4837 Stanley, W. A.	Dexter
8388 Diddy, C. A.	Redfield	4972 Spohr, T. E.	Perry
3990 Douglas, S. A.	Adel	5188 Searr, H. A.	Perry
5013 Dooley, E. P.	Perry	5799 Smith, S. M.	Perry
238 Freed, D. A.	Redfield	5815 Sackett, W. L.	De Soto
4045 Forsyth, J. C.	Redfield	5909 Smith, E. A.	Woodward
4021 Gardner, G. H.	Perry	6780 Sager, A. D.	Perry
6013 Heston, H. B.	Adel	6876 Stream, H. C.	De Soto
8598 Ingleson, F. E.	Dawson	4682 Taylor, J. L.	Adel
5617 Johnsen, A. L.	Perry	3297 Thompson, R. K.	Waukeee
5716 Krabel, W. O.	Adel	5585 Updegraff, S. L.	Dallas Center
160 Long, G. P.	Perry	4813 Underwood, Wm.	Dexter
8501 Laughlin, M. R.	Perry	6912 Voss, C. E.	Minburn
5014 McArthur, W.	Perry	1047 Willis, A. E.	Perry
4003 Naiden, H. R.	Woodward	5870 Wright, C. M.	De Soto
5896 O'Malley, J. E.	Perry	6048 Winfrey, F. W.	Granger

DAVIS.

8314 Cronk, C. H.	Bloomfield	6412 Green, A. L.	Bloomfield
77 Dunlavy, Jas.	Stiles	9785 Haslach, J. A.	Bloomfield
4929 Davis, C. R.	Bloomfield	800 McAchran, W. H.	Bloomfield
801 Gibbons, A. D.	Bloomfield	4277 Mathwa, C. W.	Pulaski
4520 Gordenier, Isie.	Pulaski	3885 Perry, C. E.	Bloomfield
4621 Garrett, J. M.	Troy	2832 Shelton, A. H.	Bloomfield
4761 Guernsey, J. J.	Bloomfield	5693 Welch, A. H. B.	Bloomfield
5615 Giles, Grant.	Stiles	6353 York, T. E.	Bloomfield

DECATUR.

2241 Alexander, W. A.	Leon	6545 Aten, H. E.	Leon
4231 Armstrong, Ernest L.	Grand River	873 Belding, A. L.	Van Wert

DECATUR—CONTINUED.

3179 Bone, H. C.	Grand River	2269 Mitchell, Enos	Weldon
4187 Bear, W. S.	Decatur City	2227 Myers, W. E.	Leon
4366 Barrows, C. H.	Lamoni	736 Potts, H. W.	Garden Grove
5332 Beil, E. E.	Leon	476 Robinson, J. H.	Davis City
5900 Bonoe, F. M.	Grand River	4388 Stempel, W. C.	Leon
2243 De Kalb, B. D.	De Kalb	5446 Stiles, W. H.	Garden Grove
6484 Duff, C. M.	Decatur	5510 Shields, J. S.	Decatur City
4285 Graves, F. A.	Garden Grove	6497 Sloan, R. E.	Leon
5062 Haag, B. M.	Pleasanton	2323 Van Werden, Lewis.	Leon
3829 Jones, P. W.	Weldon	4055 Vanderly, John.	Leon
2130 Layton, H. R.	Leon	2222 Waight, W. F.	Leon
2530 Laney, W. J.	Davis City	5410 Young, L. H.	Leon

DELAWARE.

3093 Anders, F. W.	Manchester	7 Lont, C. B.	Delaware
4719 Abbott, W. A.	Manchester	720 Livingston, Hugh	Hopkinton
4943 Armstrong, T. B.	Greeley	3215 Long, F. W.	Manchester
713 Bush, J. V.	Coalsburg	5784 Mulvehill, E. F.	Masonville
6116 Briggs, E. B.	Manchester	4105 McKelvy, W. O.	Ryan
6977 Beggs, C. R.	Manchester	5152 Philipp, A. C.	Manchester
6932 Clites, A. M.	Masonville	919 Smith, H. C.	Manchester
4323 Denton, R. A.	Manchester	5394 Smith, L. O.	Manchester
5436 Gearhart, N. A.	Hopkinton	5419 Storey, G. W.	Manchester
2051 Grems, B. W.	Manchester	5519 Striegel, J. T.	Ryan
5144 Johnson, E. R.	Delhi	5908 Thomas, Wm.	Onida
5041 Kendall, Charles	Earlville	680 Williamson, W. R.	Hopkinton
6500 Klonus, U. C.	Winthrop	4387 Williams, F. A.	Hopkinton

DES MOINES.

5003 Bartlett, W. S.	Burlington	5268 Melsian, H. F.	Burlington
980 Churchill, Frank.	Burlington	5318 Mollison, A. E.	Burlington
4592 Cilley, W. W.	Mediapolis	1112 Niehaus, E. W.	Burlington
3974 Cochran, W. L.	Burlington	2104 Nicksie, Gustav.	Burlington
4553 Duncan, O. F.	Burlington	3558 Newman, E. L. J.	Burlington
5770 Fish, H. T.	Mediapolis	1535 Price, J. W.	Burlington
5597 Froid, C. J.	Burlington	291 Richter, A. H.	Burlington
1559 Henry, G. C.	Burlington	2542 Robinson, D. D.	Burlington
3498 Hamler, E. C.	Burlington	2735 Robinson, E. H.	Burlington
4066 Happman, John	Burlington	199 Salmon, M. M.	Burlington
4573 Held, William	Burlington	1110 Shafer, J. A.	Burlington
3365 Jordan, H. M.	Burlington	4545 Sutter, J. R.	Burlington
4552 June, H. T.	Burlington	4739 Salmon, E. M.	Burlington
5106 Kaiser, W. O.	Burlington	5618 Smith, C. W.	Burlington
4471 Larson, C. O.	Burlington	1872 Witte, J. H.	Burlington
5233 Litzrodt, E. P.	Burlington	5119 Walzenegger, J. G.	Burlington

DICKINSON.

759 Brownell, E. L.	Spirit Lake	6247 Johnson, Jay.	Terrill
4056 Barmore, V. A.	Lake Park	4984 McGrew, E. S.	Spirit Lake
4915 Banks, E. P.	Terrill	5114 Merritt, F. H.	Arnold's Park
4799 Dexheimer, W. F.	Spirit Lake	4417 Swenson, S. N.	Superior
1045 Farnham, L. H.	Spirit Lake	5353 Shultz, C. S.	Lake Park
5397 Gill, W. H.	Terrill	6051 Stephenson, J. O.	Milford
6808 Gill, C. E.	Terrill	6209 Taggart, H. G.	Montgomery
5098 Hageboeck, W. H.	Lake Park	5494 Wolto, W. H.	Milford
3559 Ingvalstad, C. O.	Milford		

DUBUQUE.

1175 Brown, W. K.	Dubuque	6665 Kees, J. L.	Dubuque
3219 Brown, C. J.	Dubuque	226 La Nica, N. J. G.	Dubuque
4336 Becker, J. G.	Dubuque	536 Livermore, C. A.	Cascade
4904 Bruckner, Edward	Dyersville	3454 Liek, C. W.	Dubuque
5304 Barry, J. A.	Farley	4782 Leik, W. C.	Dubuque
3639 Dennert, Frank.	Dubuque	4952 Lenz, J. A.	Dubuque
6072 Doff, J. E.	Dubuque	6295 McFarlane, Robert.	Dubuque
480 Fraatz, F. C.	Dubuque	2283 Oldridge, W. V.	Farley
5339 Fies, F. B.	Dubuque	1558 Porter, E. C.	Dubuque
5090 Falkenhedner, Charles.	Dubuque	3157 Palen, J. A.	Dubuque
4478 Grimm, A. G.	Dubuque	4742 Palen, Anton J.	Dubuque
4980 Glynn, T. H.	Cascade	5529 Peryon, E. P.	Dubuque
6395 Gill, H. J.	Dubuque	477 Ruete, T. W.	Dubuque
6799 Grim, F. H.	Dubuque	4202 Ruete, O. M.	Dubuque
61 Harwood, George.	Epworth	5357 Roth, C. P.	Dyersville
4080 Haas, D. J.	Dubuque	5558 Ruegnitz, B. A.	Dubuque
4502 Hedley, J. E.	Dubuque	6084 Rottler, F. C.	Dubuque

DUBUQUE—CONTINUED.

6552 Ragatz, F. J.....	Dubuque	6668 Thoma, John.....	Dubuque
6717 Roche, J. L.....	Cascade	4789 Ulber, M.....	Dubuque
6867 Roth, H. E.....	Dyersville	450 Wunderlich, G. W.....	Dubuque
4343 Samson, C. H.....	Dubuque	8019 Witter, J. W.....	Dubuque
4404 Sahn, J. L.....	Dubuque	4340 Weber, J. H.....	Cascade
6158 Stephan, C. W.....	Dubuque	5026 Wunderlich, F. H.....	Dubuque
227 Thorman, G. F.....	Dubuque	6017 Winder, E. E.....	Dubuque
431 Torbert, W. H.....	Dubuque	6842 Walker, Wm. H.....	Dubuque
5193 Ternes, G. W.....	Dubuque	5718 Zillig, J. A., Jr.....	Dubuque

EMMET.

5477 Amundson, H. J.....	Wallingford	5817 Judisch, C. B.....	Estherville
3696 Brown, H. F.....	Armstrong	3199 Klopp, J. J.....	Estherville
6504 Bartels, G. A.....	Wallingford	5450 Keables, H. F.....	Dolliver
5385 Bale, G. W.....	Estherville	5167 Lyon, Chas.....	Estherville
8088 Colvin, A. W.....	Armstrong	6078 Richman, F. H.....	Estherville
5764 Cain, R. B.....	Estherville	3802 Ritten, L. N.....	Estherville
2970 Dean, F. A.....	Estherville	48-2 Stockwell, O. W.....	Armstrong
4811 Erickson, N. L.....	Dolliver	5906 Stoakes, E. R.....	Armstrong
6683 Eckholm, D. G.....	Armstrong	5365 Tobin, C. P. S.....	Ringsted
3840 Hassela, J. C.....	Armstrong	4905 Williams, S. H.....	Estherville
6684 Hadley, Lyell.....	Dolliver		

FAYETTE.

6222 Abbott, F. C.....	Oelwein	3626 Phillips, E. M.....	West Union
72 Burnside, J. M.....	Waucoma	5960 Perry, J. R.....	Hawkeye
2997 Burlingham, E. H.....	Oelwein	5240 Pfeiffer, W. F.....	Oelwein
4599 Bigler, L. E.....	Wadena	3959 Rathburn, D. C.....	Fayette
5640 Bell, C. F.....	Oelwein	5580 Ramsey, A.....	Randall
6903 Brooks, A. H.....	Hawkeye	6663 Rickert, W. M.....	Fayette
4098 Crowe, Will.....	Clermont	386 Stiles, A. E.....	West Union
5178 Collins, A. B.....	Oelwein	2504 Stoehr, G. A.....	Elgin
4999 Duncan, J. H.....	West Gate	3471 Shumway, W.....	Brush Creek
5407 Green, O. J.....	Oelwein	5180 Sarselt, W. F.....	West Union
12 Husband, C. A.....	Waucoma	5634 Stoehr, Gus L.....	Elgin
2643 Hanes, G. W.....	Maynard	6109 Schneider, Frew. W.....	West Union
4790 Hill, F. S.....	Oelwein	6262 Sarselt, C. F.....	Oelwein
4614 Haygarth, W. W.....	Oelwein	1930 Wilson, A. C.....	Oelwein
5666 McLaughlin, O. J.....	Oelwein	3018 Waterbury, D. D.....	Fayette
4443 McMartin, C. S.....	West Union	3102 Walker, F. S.....	Fayette
4596 Mettlin, A. J.....	Oelwein	3555 White, F. W.....	West Union
5388 Masters, C. L. E.....	Maynard	3936 Walrath, B. B.....	Brush Creek
6510 Muchlenthaler, R. W.....	Elgin		

FLOYD.

1149 Birney, Lewis.....	Nora Springs	4511 May, B. W.....	Charles City
2335 Bennett, J. W.....	Floyd	3809 Miles, C. W.....	Charles City
3527 Brincken, Anton.....	Rockford	4815 Miles, C. L.....	Charles City
5177 Bartz, E. N.....	Rockford	4902 Murray, Mame E.....	Rudd
1824 Birney, E. E.....	Nora Springs	5732 Murray, M. J.....	Charles City
5749 Brincken, Herman.....	Rudd	6009 Merkel, C. D.....	Charles City
6968 Brouillard, Ed.....	Charles City	5062 Nolan, G. R.....	Charles City
6371 Cutler, Tyner M.....	Nora Springs	3026 Paddleford, J. F.....	Nora Springs
3648 Dodd, A. B.....	Charles City	623 Peterson, A. E.....	Charles City
2321 Legal, J. G.....	Charles City	4083 Smith, W. C.....	Marble Rock
1124 Miles, W. L.....	Charles City	5933 Speedling, E. W.....	Marble Rock
3094 May, Geo. E.....	Charles City	5600 Treat, J. W.....	Charles City
4245 Mathews, F. A.....	Clear Lake	4858 Yeager, C. W.....	Rockford

FRANKLIN.

3211 Aborn, F. I.....	Sheffield	6871 Marschall, J. J.....	Hampton
5209 Aborn, F. C.....	Sheffield	4442 Overton, W. T.....	Hampton
6205 Aagesen, E. A.....	Coulter	6596 Pence, W. R.....	Alexander
629 Baldwin, E. V.....	Hampton	5271 Romaine, C.....	Popejoy
5751 Billingsley, B. F.....	Hampton	4498 Relihan, J. P.....	Latimer
6749 Busch, W. H.....	Hampton	5859 Rodemeyer, F. H.....	Latimer
3251 Funk, E. M.....	Hampton	4792 Stalford, G. A.....	Latimer
4274 Gressler, F. J.....	Chapin	5591 Storck, H. C.....	Sheffield
3979 Harriman, O. B.....	Hampton	1936 Tidd, C. H.....	Geneva
4722 Harriman, J. E.....	Hampton	6735 Townswick, Thos.....	Hampton
4748 Lambert, G. H.....	Hampton	6071 Wetty, C. H.....	Hampton
4591 Marschal, C., Jr.....	Hampton	6561 Williamson, A. J.....	Alexander
6557 Musser, C. J.....	Hanse	6960 Watts, J. C.....	Hampton

FREMONT.

8126 Biddinger, J. W.....	Thurman	4840 Newhor, J. C.....	Riverton
4462 Boyer, W. M.....	Hamburg	1264 Ott, C. M.....	Tabor
5879 Coleman, Carl.....	Farragut	5787 O'Connor, T. G.....	Imogene
6125 Cole, T. O.....	Thurman	1225 Penn, A. V.....	Sidney
3750 Doyle, C. E.....	Hamburg	167 Robbins, W. H.....	Farragut
5068 Foster, O. G.....	Percival	501 Snyder, O. H.....	Tabor
1722 Harris, T. O.....	Bartlett	4076 Swatman, B. F.....	Tabor
4667 Halbert, M. M.....	Imogene	4411 Simon, Arthur B.....	Hamburg
6834 Head, M. W.....	Imogene	6196 Shaw, H. I.....	Sidney
4758 Kidd, Mrs. Emma F.....	Riverton	5840 Thomas, D. W.....	Randolph
688 Mann, Jas.....	Hamburg		

GREENE.

6488 Billinger, C. T.....	Scranton	8995 Kirby, S. C.....	Grand Junction
616 Crow, W. M.....	Grand Junction	4996 Lowery, O. W.....	Grand Junction
4631 Crow, R. E.....	Grand Junction	5873 Lowery, J. R.....	Grand Junction
6451 Cowser, C. E.....	Jefferson	4484 Latta, K. C.....	Paton
5917 Davies, L. E.....	Jefferson	6686 Martin, W. K.....	Cooper
4964 Epperly, C. C.....	Jefferson	4497 Miller, Geo.....	Churdan
671 Foy, E. W.....	Jefferson	1462 Osborne, B. F.....	Ripley
1598 Freeman, Edw.....	Jefferson	2291 Olive, E. A.....	Scranton
3536 Foster, F. E.....	Scranton	5416 Palmer, L. L.....	Paton
5195 Ginther, J. S.....	Scranton	4518 Shuey, J. F.....	Jefferson
5681 Hill, M. J.....	Churdan	6995 Sack, Bertrand.....	Ripley
5978 Jensen, A. M.....	Dana	4580 Sells, F. W.....	Jefferson

GRUNDY.

4181 Addy, H. C.....	Grundy Center	5002 Junger, W. F.....	Reinbeck
919 Bowman, J. K.....	Conrad Grove	6611 Junger, P. H.....	Reinbeck
6068 Conradi, C. C.....	Holland	8510 Meyers, E. G.....	Reinbeck
4285 Deabner, W. F.....	Wellsburg	3920 McAnner, Ernest.....	Reinbeck
5090 Frahm, F. W.....	Beaman	5301 Rhea, W. F.....	Grundy Center
2804 Hoag, E. L.....	Beaman	6984 Schreurs, H. B.....	Conrad
2904 Hummel, Mathias.....	Grundy Center	5238 Trumbull, E. J.....	Conrad
4900 Heiberger, M. G.....	Grundy Center	8326 Wheeler, F. E.....	Conrad
6186 Hilbrand, Mike.....	Stout	5848 Wenham, F. E.....	Beaman
5151 Hummel, J. F.....	Grundy Center	6798 Young, C. R.....	Grundy Center

GUTHRIE.

2805 Adair, Chas. R.....	Yale	8207 Machesney, W. T.....	Bagley
5970 Berner, C. A.....	Stuart	3969 Mandenhall, J. R.....	Menlo
6748 Brock, Beessie P.....	Panora	5599 Mareau, W. A.....	Guthrie Center
4945 Burr Richter, W. C.....	Panora	6188 Matheas, G. A.....	Greenfield
6058 Clift, Jesse.....	Yale	4916 Noblett, R. C.....	Stuart
4422 Crabbe, A. M.....	Menlo	6964 Nysoe, P. N.....	Menlo
6428 Crosby, Lottie E.....	Stuart	4259 Readout, Albert.....	Stuart
6944 Corbette, C. M.....	Bayard	3965 Roberts, W. G.....	Panora
2324 Dosh, Ed.....	Guthrie Center	4967 Raber, A. S.....	Stuart
3321 Doudna, C. B.....	Bayard	6927 Ricedorff, E. M.....	Menlo
1781 Herriott, John.....	Stuart	2590 Smith, A. W.....	Guthrie Center
5987 Hoover, G. D.....	Casey	3910 Shaffer, O. W.....	Casey
5718 Jones, M. L.....	Guthrie Center	4896 Shaffer, J. S.....	Casey
5955 Jacobs, F. R.....	Jamaica	4397 Shannon, E. S.....	Jamaica
6639 Kinney, E. C.....	Jamaica	5105 Story, C. F.....	Stuart
8288 Lakin, A. M.....	Yale	6629 Stotts, O. D.....	Yale
3806 Lemmon, A. D.....	Guthrie Center	1738 Treat, Jas. A.....	Stuart
6970 Lynch, W. A.....	Bayard	4402 Young, J. M.....	Jamaica
807 Maulsby, Ellis.....	Casey		

HANCOCK.

4588 Amsden, W. C.....	Garner	6242 Medowell, Harry.....	Crystal Lake
5829 Butts, G. W.....	Goodell	4549 Nelson, Wm.....	Corwith
4499 Carton, J. A.....	Britt	5009 Oelke, W. C.....	Corwith
6948 Clark, C. R.....	Corwith	4780 Phelps, O. W.....	Kanawha
4975 Goodwin, C. G.....	Garner	6896 Pratt, C. E.....	Kanawha
1142 Hamilton, Catharine B.....	Garner	4917 Roe, C. O.....	Britt
4148 Harr, J. L.....	Klemme	594 Smith, H. W.....	Garner
5712 Jensen, J. W.....	Kanawha	5145 Snow, Matilda B.....	Garner
8248 Miller, D. J.....	Britt	6290 Stibgen, R. H.....	Britt
5415 Meyer, H. C.....	Britt	4191 Twilford, L. O.....	Garner
5191 McMahon, Thomas.....	Garner	5794 Wood, R. V.....	Britt
6115 McGuire, J. L.....	Goodell	3835 Wray, D. C.....	Britt
6287 Mortensen, F. C.....	Britt	6365 Zeiger, F. W.....	Garner

HARDIN.

4987 Alberly, W. F.....	Hubbard	6098 Lyon, Charles.....	Steamboat Rock
4998 Bowmann R. H.....	Buckeye	5015 Lowder, Wm.....	New Providence
5000 Baker, W. F.....	Eldora	5728 Lomen, Gustave.....	Radcliffe
5987 Orock, G. D.....	Iowa Falls	6801 Long, O. F.....	Whitten
4406 Oorfe, W. H.....	Union	6802 Long, U. G.....	Iowa Falls
4155 Cowan, J. D.....	Alden	5270 Miller, J. J.....	Ackley
4176 Coveny, T. H.....	Eldora	6080 Magee, S. R.....	Iowa Falls
4785 Coveny, J. F.....	Eldora	8771 Nix, J. M.....	Ackley
6172 Childs, I. B.....	Garden City	4475 Nix, Mike.....	Hubbard
6555 Cowan, H. L.....	Iowa Falls	4098 Pfander, C. F.....	Ackley
6199 Calpin, J. F.....	Eldora	5544 Parr, D. E.....	Cedar Falls
3832 DeMarsha, F. E.....	Radcliffe	3838 Reed, J. D.....	Eldora
5598 Downs, F. B.....	Iowa Falls	5506 Reed, C. T.....	Steamboat Rock
1816 Finster, H. J.....	Steamboat Rock	2070 Swartz, J. L.....	Iowa Falls
4709 Gregory, F. W.....	Iowa Falls	4577 Swallum, R. R.....	Hubbard
5150 Hatelstad, M. L.....	Radcliffe	5023 Steely, J. W.....	Eldora
5907 Halden, W. R.....	Union	5707 Smith, G. F.....	Eldora
6198 Hilbrand, Mike.....	Steamboat Rock	4448 Schultz, H. N.....	Ackley
4685 Junkerman, Julius.....	Ackley	6849 Schultz, H. L.....	Ackley
3709 Koeneman, E. O.....	Whitten	5395 Tobin, C. P. S.....	Eldora
4604 Kent, C. W.....	Alden	6443 Tobin, J. H.....	Iowa Falls
5237 Koeneman, W. E.....	Whitten	3908 Wagner, O. F.....	Alden
4998 Lodage, Wm.....	Owasa	5455 Winters, J. P.....	Hubbard
5221 Lagerquist, N. N.....	Eldora		

HARRISON.

5998 Austin, S. E.....	Dunlap	6875 Kavanagh, M. P.....	Dunlap
4128 Berkley, S. L.....	Woodbine	4825 Lehan, J. W.....	Dunlap
4295 Boody, F. D.....	West Bend	2409 McCoin, C. B.....	Persia
4689 Brown, L. W.....	Missouri Valley	2571 McFarlain, Thomas.....	Mondamin
5536 Bradish, C. E.....	Missouri Valley	3127 McKay, B. A.....	Missouri Valley
6083 Barkeley, O. H.....	Logan	2548 Osborne, G. S.....	Missouri Valley
5953 Clark, J. A.....	Missouri Valley	5409 O'Leary, Mike.....	Woodbine
6719 Chiles, E. M.....	Persia	5097 Penney, T. A.....	Logan
6271 Dner, Wm. E.....	Missouri Valley	5931 Pelton, B. R.....	Missouri Valley
1710 Ellis, Clark.....	Little Sioux	3224 Reed, C. W.....	Woodbine
6735 Ellis, S. S.....	Little Sioux	6741 Rhoden, R. H.....	Modale
6473 Ford, J. N.....	Logan	466 Satterlee, Dwight.....	Dunlap
2936 Hill, F. M.....	Persia	475 Satterlee, E. S.....	Dunlap
5460 Huff, T. C.....	Mondamin	352 Schiley, G. P.....	Missouri Valley
4959 Harvey, R. W.....	Missouri Valley	5420 Schiley, G. F.....	Missouri Valley
5532 Hauptman, D. H.....	Dunlap	5447 Scott, H. W.....	Little Sioux
5943 Hansen, Hans.....	Logan	5527 Schiller, Edgar.....	Logan
6099 Hope, Eva Pearl.....	Little Sioux	6192 Swarts, F. G.....	Missouri Valley
6643 Hutchinson, J. W.....	Logan	6030 Task, P. M.....	Dunlap
6574 Iddings, J. F.....	Logan	6219 Willan, L.....	Pisgah
4590 Jones, J. D.....	Logan	6884 Wingate, C. S.....	Missouri Valley

HAMILTON.

3845 Arthur, H. J.....	Webster City	4655 Johnson, Franklin.....	Stratford
5397 Boyle, Norton M.....	Webster City	4801 Keltz, B. F.....	Webster City
6348 Busby, K. E.....	Webster City	2391 Little, M. A.....	Webster City
6940 Benson, M. D.....	Randall	5838 Mitchell, J. H.....	Webster City
3860 Cole, Victor F.....	Jewell	5098 Newman, Orace.....	Webster City
3875 Cole, Chas. F.....	Jewell	1909 Peterson, P. C.....	Stratford
4783 Crosley, Mont.....	Randall	5238 Ruegnitz, Fred.....	Stratford
5399 Cameron, J. R.....	Webster City	4476 Schultz, O. W.....	Williams
5591 Carver, R. F.....	Jewell	4741 Snider, W. C.....	Webster City
6200 Carey, J. F.....	Webster City	4987 Schultz, W. B.....	Williams
6306 Deardorff, V. G.....	Webster City	1361 Teed, G. W.....	Webster City
2014 Fidler, J. D.....	Williams	4473 Torrence, J. D.....	Kamrar
2229 Griffith, J. C.....	Ellsworth	5303 Thoreson, Edward.....	Stanhope
2724 Gerber, L. M.....	Webster City	6801 Tilden, C. G.....	Stanhope
5219 Greiner, L. F.....	Webster City	76 Waigamot, A. E.....	Webster City
2560 Holbrook, G. A.....	Webster City	6581 Whiteman, H. E.....	Webster City

HENRY.

888 Arnold, O. V.....	Mt. Pleasant	6292 Horton, Grant.....	Olds
4094 Breworth, A. H.....	Mt. Pleasant	3292 Jericho, J. H.....	Mt. Pleasant
5943 Barnett, W. F.....	Wayland	1320 Lindley, B. B.....	Winfield
4078 Crow, A. S.....	Salem	3394 Lindley, J. M.....	Winfield
4598 Carse, G. H.....	Winfield	6905 Mathews, J. A.....	Mt. Union
6018 Dunshee, G. M.....	Mt. Pleasant	3837 Ott, J. R.....	Mt. Pleasant
4562 Drummond, O. M.....	Mt. Pleasant	5576 Ott, C. A.....	Mt. Pleasant
1319 Hanna, J. W.....	Winfield	837 Pyle, S. M.....	Mt. Pleasant
8165 Huston, J. E.....	Winfield	6070 Pyle, F. S.....	Mt. Pleasant
4298 Holland, J. E.....	Mt. Pleasant	6807 Plitt, John.....	Mt. Pleasant

HENRY—CONTINUED.

4426 Snyder, R. B.	New London	3592 Van Ausdale, G. M.	New London
5081 Smutz, W. A.	Hillsboro	927 Weaver, A. R.	Salem
5050 Sheppard, S. H.	Mt. Pleasant	4622 Williams, A. H.	Mt. Pleasant
827 Van Cise, I. P.	Mt. Pleasant	5812 Walker, C. O.	Mt. Pleasant

HOWARD.

5548 Adams, W. C.	Elma	4889 Lowery, F. B.	Cresco
4892 Brooks, W. W.	Cresco	5181 Lomak, E. T.	Cresco
2949 Connolly, Wm.	Cresco	5196 Milz, W. F.	Cresco
3819 Connolly, J. P.	Cresco	6348 McWilliams, C. T.	Chester
4456 Clemmer, P. D.	Cresco	3598 Overfield, E. E.	Elma
6844 Crew, James H.	Lime Springs	4829 Reed, J. W.	Lime Springs
3956 Dayton, D. D.	Lime Springs	4874 Shuttleworth, H. W.	Cresco
4877 Davies, W. T. T.	Elma	5102 Shuttleworth, E. H.	Cresco
5496 Dayton, Lizzie A.	Lime Springs	4896 Schwennings, S. G.	Cresco
4887 Eckstein, E. J.	Chester	6502 Schultz, Will F.	Cresco
8981 Jackson, G. H.	Cresco	4440 Taylor, O. R.	Cresco
6561 Keefe, A. J.	Elma	2887 Van Leuven, G. M., Jr.	Lime Springs
4619 Luers, J. H.	Cresco	2882 Wachtel, Leo. C.	Elma
4677 Love, J. G.	Lime Springs		

HUMBOLDT.

5157 Arent, A. L., Jr.	Rutland	6685 Maher, L. L.	Gilmore City
6817 Bemis, F. C.	Pioneer	2148 McElwaine, R. H.	Humboldt
4908 Cole, H. B.	Renwick	2656 McFarland, A. W.	Dakota City
4634 Cole, Mrs. Ella C.	Renwick	5505 McNamara, F. H.	Humboldt
4927 Connor, Edw. E.	Livermore	6604 Norton, G. Coe	Livermore
5126 Demaray, C. H.	Livermore	5049 Preble, C. H.	Humboldt
4115 Gaughstad, L. M.	Bode	6774 Porter, George E.	Renwick
8186 Hubbard, H. O.	Humboldt	8763 Russ, A. E.	Humboldt
4211 Hackett, C. W.	Ottosen	87 Sherman, J. M.	Renwick
4896 Hack, Leon.	Livermore	5793 Tyndale, George S.	Hardy
5264 Hastings, W. C.	Gilmore City	5153 Vohs, G. L.	Ottosen
5360 Helmen, M. H.	Bode	5923 Watson, E. L.	Bode
6211 Hansen, J. J.	Thor	5934 Wilson, A. W.	Bradgate

IDA.

2567 Bilby, A. M.	Galva	8948 Miller, Frank T.	Galva
3308 Bronson, E. C.	Battle Creek	6188 Millan, C. O.	Galva
3054 Farnsworth, D. W.	Galva	6461 Reppert, Gus	Battle Creek
4650 Hildeshime, J. J.	Galva	8014 Somers, J. W.	Ida Grove
2289 Johnson, Barnett.	Ida Grove	5445 Sylvester, V. W.	Battle Creek
4780 Kiner, F. C.	Ida Grove	8262 Walker, J. T.	Holstein
4756 Loucks, J. C.	Ida Grove	2820 Wilson, C. L.	Holstein

IOWA.

8998 Alt, G. W.	Williamsburg	5190 Koch, A. F.	Middle Amana
1890 Baughman, O. F.	Marengo	6911 Lyon, Chas. T.	Marengo
2441 Bosley, J. E.	Ladora	6008 Miller, F. Wm.	Homestead
3781 Brown, L. E.	Parnell	6054 McArthur, W. H. B.	Marengo
5856 Coakley, J. I.	Parnell	4989 Perry, T. J.	Millersburg
500 Eddy, W. M.	Marengo	4778 Ross, N. K.	Victor
1681 Fletcher, W. G.	Williamsburg	5369 Remington, G. E.	North English
6086 Fletcher, F. W.	Williamsburg	5298 Salya, L. D. G.	Victor
8680 Foster, T. M.	North English	6237 Schadt, Conrad.	Amana
9920 Goldthwait, T. O.	Marengo	6484 Schnell, T. J.	Parnell
5186 Gwinn, E. H.	Victor	6021 Schulte, J. F.	Victor
8818 Haas, Fred.	Marengo	1793 Stover, B. H.	Marengo
8718 Holmes, W. L.	Williamsburg	2696 Wagner, J. A.	North English
6198 Hatter, L. W.	Millersburg		

JACKSON.

4700 Avery, A. M.	Maquoketa	1284 Eldredge, C. G.	Sabula
2189 Belden, M. J.	Maquoketa	6706 Freburg, A. E.	Monmouth
8702 Butterworth, H. O.	Maquoketa	1285 Guenther, J. H.	Sabula
4848 Broxam, A. L.	Maquoketa	1778 Hubbard, L. W.	Monmouth
6228 Brown, J. H.	Maquoketa	4129 Hintzen, N. J.	La Motte
305 Dierkes, Charles.	Bellevue	4848 Hanks, Ed. A.	Bellevue
6289 Daudel, H. A.	Andrew	2300 Jenkins, Hugh.	Freston
5598 Dierkes, Frederick, Jr.	Bellevue	4698 Kranz, G. F.	Bellevue

JACKSON—CONTINUED.

5502	Kegler, J. J.	Spring Brook	4453	Marner, W. A.	Miles
2552	Loose, D. N.	Maquoketa	2556	Nitzsche, J. C.	Maquoketa
5553	Leigh, H. J.	Sabula	208	Rolling, John	Bellevue
6515	Littlefield, H. H.	Baldwin	6775	Rolling, John, Jr.	Bellevue
6771	Miller, H. R.	Monmouth	4140	Walters, J. H.	Maquoketa
2563	McCormick, M. F.	Baldwin	5939	Weck, J. J.	Bellevue
6282	McMurray, C. A.	Maquoketa	4182	Young, O. C.	Maquoketa

JASPER.

3595	Birchard, Rufus	Kellogg	6356	Proctor, Mamie	Ira
3484	Boyd, H. C.	Colfax	1153	Quire, C. E.	Newton
6598	Berry, J. F.	Colfax	2390	Ryan, J. R.	Colfax
4186	Carpenter, O. O.	Sully	8443	Riddle, N. D.	Prairie City
4210	Cozad, C. B.	Prairie City	4928	Riddle, C. H.	Prairie City
4654	Carpenter, F. F.	Galesburg	6539	Reed, C. B.	Colfax
4912	Downs, H. S.	Baxter	975	Smith, J. E.	Kellogg
5351	Elliot, Alexander	Mingo	5327	Spain, R. T.	Newton
3210	Freeman, J. H.	Prairie City	5422	Shaw, F. W.	Monroe
4737	Foster, W. C.	Newton	1694	Thompson, J. C.	Newton
5339	Forney, C. M.	Baxter	2656	Turner, L. C. S.	Colfax
3049	Graham, C. C.	Baxter	6410	Thomas, F. S.	Newton
4134	Hindorf, A. E.	Newton	2391	Wagley, O. N.	Newton
1897	Jones, G. W.	Colfax	4230	Weyrick, H. A.	Newton
3403	Kennedy, A. L.	Newton	4366	Westbrook, Burr	Newton
5232	Lane, F. S.	Monroe	5110	Weirick, C. J.	Colfax
5359	Loar, Thos. J.	Monroe	5196	Wanberg, G. E.	Baxter
5347	Marquis, F. A.	Colfax	5277	Wilson, O. N.	Monroe
5763	Nollen, J. H.	Newton	5741	Wray, John A.	Sully
932	Parmenter, R. F.	Newton	6963	Weston, N. T.	Colfax
3413	Painter, Wm.	Lynnville			

JEFFERSON.

5317	Bundy, O. M.	Packwood	6374	Johnson, T. E.	Fairfield
557	Clark, G. D.	Fairfield	1053	Mealey, D. H.	Pleasant Plains
3932	Collins, D. C.	Fairfield	4623	Marsh, W. K.	Batavia
4723	Cleasby, A. B.	Libertyville	1009	Peters, H. C.	Fairfield
5134	Copeland, Jay	Fairfield	1967	Reel, Z. T.	Fairfield
908	Hill, T. W.	Batavia	4514	Shriner, F. S.	Fairfield
586	Higley, H. D.	Fairfield	1703	Thomas, Louis	Fairfield
6400	Jericho, Fred W.	Fairfield	6236	Thoma, S. H.	Fairfield

JOHNSON.

5596	Anderson, L. R.	Oxford	5070	Mutchler, J. S.	Iowa City
215	Boerner, H. W.	Iowa City	5724	McCoy, C. B.	Oxford
3162	Boerner, E. A.	Iowa City	6336	McGuan, C. W.	Iowa City
3276	Boerner, E. L.	Iowa City	3825	Northup, A. S.	Iowa City
4736	Brown, J. W.	Lone Tree	5363	Novak, J. H.	Iowa City
5654	Campbell, Le Roy	Iowa City	1906	Robinson, H. A.	Oxford
1023	Doty, E. A.	Oxford	4731	Rawhouser, J. L.	Lone Tree
1903	Davis, M. W.	Iowa City	721	Shrader, W. E.	Iowa City
1925	Frost, C. E.	Oxford	2938	Shrader, Chas. C.	Iowa City
3130	Graff, W. H.	Iowa City	8397	Stevens, J. L.	Iowa City
3662	Hoffer, A. E.	Solon	5779	Teeters, W. J.	Iowa City
6260	Honnell, E. E.	Iowa City	1503	Whitstone, J. H.	Iowa City
2757	Louis, Henry	Iowa City	5596	Ward, J. J.	Iowa City
4523	Morrison, W. W.	Iowa City	6801	Williams, E. E.	Solon

JONES.

1824	Babcock, E. M.	Wyoming	4548	Macomber, G. B.	Olin
5163	Brock, W. B.	Olin	5636	McLaughlin, C. J.	Monticello
5306	Brown, W. E.	Anamosa	4487	Ormsby, F. E.	Martelle
5939	Brazelton, W. E.	Center Point	844	Putnam, R. A.	Monticello
4931	Daugherty, A. E.	Onslow	3876	Port, F. W.	Olin
5378	Dorgeloh, H.	Anamosa	5434	Prader, D. C.	Monticello
3202	Grimwood, A. E.	Oxford Junction	275	Skinner, W. B.	Anamosa
4938	Gibbons, A. S.	Anamosa	217	Skinner, Mary A.	Anamosa
3173	Howard, C. R.	Anamosa	4173	Sigworth, D. B.	Anamosa
6800	Jones, C. R.	Wyoming	4293	Soetje, O. H.	Monticello
843	Kempf, A. H.	Monticello	1942	Tiarks, Herman	Monticello
4873	Mackrill, W. A.	Onslow			

KEOKUK.

3504 Allison, S. M.	Nassau	2517 Mitchell, A. F.	Delta
6794 Adams, H. C.	Sigourney	6769 Mittag, F. O.	Lotta Creek
6796 Alexander, R. S.	What Cheer	5446 McLaughlin, W. H.	Webster
3112 Cameron, J. F.	Keoswick	6377 Maxey, M. W.	What Cheer
3951 Coffman, W. T.	South English	6351 Namur, G. T.	Sigourney
5007 Connelly, F. L.	Hedrick	8124 Platt, W. D.	What Cheer
5048 Cameron, Mabel.	Keoswick	3985 Rehnert, O.	Keota
687 Eaton, J. E.	Keota	5021 Rehnert, H.	Keota
2469 Engeldinger, Peter.	Hedrick	6924 Rupp, H. E.	Sigourney
3912 Euler, Frank	South English	2127 Schriever, William.	Richland
4190 Eastburn, W. W.	Hedrick	4267 Sands, Francis G.	Thornburg
3048 Franken, Edw.	Sigourney	4558 Schriener, Charles A.	Sigourney
5746 Ford, John.	What Cheer	5555 Stoltz, F. L.	Hedrick
6998 Fisher, H. C.	Delta	6171 Spiers, R. C.	Hedrick
186 Griffith, J. A.	What Cheer	6264 Sondag, Nick	Harper
5087 Griffith, L. E.	Keoswick	5201 Teuscher, David.	Keota
6932 Griffith, Geo. C.	What Cheer	977 Vittetoe, H. C.	Harper
87 Himrod, Mrs. D. M.	What Cheer	5073 Valerius, Matt.	Keota
4744 Hamilton, R. C.	Keota	3965 Williams, J. O.	What Cheer
5571 Kerr, F. E.	Kinross	3796 Weller, R.	Hedrick
6565 Kuch, W. L.	Sigourney	4067 Whaley, J. A.	What Cheer
6644 Kirby, S. I.	What Cheer	4470 Weller, William.	Sigourney

KOSSUTH.

3794 Anderson, Ollie H.	Wesley	5263 Murray, W. E.	Burt
4069 Anderson, E. C.	Bancroft	5701 Moore, H. N.	Algona
5143 Adams, H. C.	Algona	4359 Mulligan, Wm. H.	Germania
5499 Anderson, C. E.	Swea City	6562 McDonnell, J. E.	Wesley
2224 Butte, F. M.	Wesley	6580 Norton, G. I.	Algona
4374 Borman, W. H.	Crystal Lake	6004 Nemmers, P. J.	Bancroft
4791 Bleich, H. E.	Ledyard	6037 Paine, G. V.	Burt
5937 Bohn, Theo.	St. Benedict	6492 Parsons, Wm. A.	Algona
6813 Bohn, Gertrude.	St. Benedict	5336 Reimers, Wm. F.	Whittemore
958 Durant, A. H.	Algona	112 Sowles, E. E.	Luverne
963 Durant, H.	Algona	3908 Studley, W. J.	Algona
3321 Dingley, F. W.	Algona	4717 Smith, E. F.	Algona
5275 Eigler, F. H.	Penton	5077 Simpson, G. A.	Swea City
4503 Falkenhaimer, Al.	Titonka	5254 Specht, A. R.	Titonka
4516 Groneman, F. C.	Whittemore	5616 Stahl, S. E.	Bancroft
5492 Grave, O. L.	Ledyard	5296 Schen, L. C.	Wesley
6155 Garman, O. W.	Titonka	5194 Shadle, F. B.	Luverne
3089 Hall, Lincoln.	Burt	6194 Sudmeier, B. H.	Swea City
4084 Heal, Frank	Wesley	6037 Stahl, E. E.	Bancroft
6985 Kain, C. B.	Algona	5696 Thomas, Bert C.	Lone Rock
6402 Kennedy, S. J.	Bancroft	645 Wilson, O. R.	Swea City
3964 Little, Chas.	Sexton	4897 Walters, O. M. C.	Bancroft
4592 Little, C. A.	Sexton	5858 Wand, Thos., Jr.	Germania
4010 Miller, R. H.	Algona		

LEE.

1687 Axt, J. H.	Ft. Madison	4415 Larmon, A.	Donnellson
428 Blackinton, W. N.	Denmark	6773 Moran, T. A.	Ft. Madison
5618 Bowen, C. A.	Keokuk	696 McGrath, T. J.	Keokuk
2173 Camp, E. R.	Keokuk	8901 O'Reilly, W. F.	Keokuk
5812 Casten, W. C.	Ft. Madison	122 Peters, C. W.	Ft. Madison
6505 DeVillbias, Jno. W.	West Point	1238 Reeves, I. C.	Keokuk
6718 DeVillbias, R. W.	West Point	1723 Roos, J. G.	Keokuk
5808 Englehardt, C. P.	Keokuk	736 Stemple, A. H.	Ft. Madison
6715 Feeney, J. E.	Keokuk	1548 Salmon, Theo.	Ft. Madison
5512 Gott, E. S.	Ft. Madison	1940 Schaefer, Geo. H.	Ft. Madison
1724 Heiser, Rudolph.	Keokuk	8766 Schmidt, H. E.	Keokuk
683 Kerr, D. A.	Keokuk	4106 Schaefer, R. R.	Ft. Madison
691 Kiedalsch, F. J.	Keokuk	4919 Sanderson, C. R.	Montrose
3068 Kiedalsch, J. F., Jr.	Keokuk	6101 Siegfried, W. H.	Keokuk
6189 Kiedalsch, G. A.	Keokuk	1851 Thomas, Camp.	Ft. Madison
4059 Lampe, T. J.	West Point		

LINN.

2506 Adams, C. R.	Cedar Rapids	4985 Boyson, G. H.	Cedar Rapids
2531 Alexander, T. R.	Marion	5404 Beck, C. C.	Marion
791 Beech, T. O.	Cedar Rapids	6059 Bennett, Joseph.	Mt. Vernon
1254 Beach Ed. M.	Troy Mills	3902 Cox, J. C.	Cedar Rapids
8246 Berryman, A. J.	Mt. Vernon	4910 Cain, J. G.	Polo
4064 Benson, N. J.	Prairieburg	8784 Culbertson, J. W.	Cedar Point

LINN—CONTINUED.

4488 Carman, C. P.	Cedar Rapids	5489 Moment, E. F.	Walker
4768 Cole, O. L.	Cedar Rapids	5674 Mittvalsky, E. C.	Cedar Rapids
5577 Campbell, J. B.	Cedar Rapids	6737 Moyer, F. C.	Cedar Rapids
6682 Clark, C. A.	Cedar Rapids	6105 McCann, H. E.	Marion
840 Dunbar, G. B.	Center Point	5153 Nietert, W. G.	Alburnett
8507 Dostal, J. L.	Cedar Rapids	3027 Owen, C. M.	Marion
4644 Emerson, R. W.	Cedar Rapids	8655 Owen, L. P.	Marion
1751 Fox, J. G.	Mt. Vernon	8634 Pitkin, F. O.	Cedar Rapids
5084 Foster, H. E.	Cedar Rapids	3610 Rogers, R. R.	Springville
6710 Firkins, Edgar	Fairfax	4753 Ryan, C. D.	Cedar Rapids
4649 Gregg, F. W.	Springville	6272 Richards, W. W.	Cedar Rapids
6229 Garnant, Lou	Cedar Rapids	1865 Sommerbeck, R.	Cedar Rapids
795 Haman, G. C.	Cedar Rapids	8203 Severa, W. F.	Cedar Rapids
2655 Hayes, J. W.	Cedar Rapids	3240 Schminko, F. C. H.	Marion
3220 Hibner, G. M.	Marion	4420 Shomler, C. E.	Cedar Rapids
3706 Hall, L. G.	Coggon	4457 Swan, A. B.	Walker
4359 Holmes, G. B.	Cedar Rapids	4685 Sargent, F. L.	Marion
4633 Holt, E. S.	Cedar Rapids	4840 Skvor, J. M.	Cedar Rapids
5273 Hartt, O. C.	Cedar Rapids	6283 Straley, W. L.	Marion
6346 Hill, Earl	Mt. Vernon	9008 Stump, W. H.	Cedar Rapids
6614 Hanzlick, Paul	Cedar Rapids	6674 Starbuck, J. N.	Marion
4485 Jones, A. F.	Cedar Rapids	498 Trueblood, John	Central City
5118 Johnson, T. W.	Cedar Rapids	4795 Trueblood, W. A.	Central City
6459 Janders, B. O.	Cedar Rapids	5928 Tomasak, Joseph	Cedar Rapids
6712 Jones, O. T.	Cedar Rapids	6650 Tichy, Charles	Cedar Rapids
754 Kittering, Solomon	Lisbon	5074 Vessnock, J. H.	Cedar Rapids
6096 Kanealey, J. F.	Cedar Rapids	411 Wilson, L. L.	Center Point
8323 Killheffer, J. F.	Mt. Vernon	1777 Wright, G. J.	Waubek
9099 Lee, J. A.	Lisbon	2647 Ward, Perry	Central City
3773 Lillis, L. M.	Marion	8363 Wilson, J. B.	Marion
5037 Lee, T. M.	Lisbon	4539 Whelihan, J. F.	Cedar Rapids
2717 Mateer, J. B.	Cedar Rapids		

LOUISA.

4241 Brown, H. L.	Columbus Junction	5753 McFadden, Wm	Oakville
5636 Brown, W. T.	Columbus Junction	1898 Pitt, H. A.	Wapello
4505 Cronk, A. P.	Wapello	6466 Paschal, Wm. W.	Columbus City
5283 Curran, W. D.	Morning Sun	4736 Robertson, Samuel	Columbus Junction
4929 Davis, C. R.	Wapello	4237 Salmon, G. A.	Columbus Junction
4745 Gipple, L. U.	Letts	5626 Shipman, C. V.	Columbus Junction
8306 Hendrix, N. T.	Columbus Junction	6672 Turkington, E. O.	Columbus Junction
6046 Higley, D. J.	Grand View	6961 Wilcox, F. O.	Columbus Junction

LUCAS.

8385 Briles, W. R.	Chariton	4918 Ocker, L. M.	Chariton
3758 Beaman, J. D.	Lucas	1084 Sprague, J. F.	Russell
5664 Dougherty, B. E.	Chariton	1119 Storie, D. Q.	Chariton
9655 Jones, E. S.	Chariton	2434 Stover, N. W.	Lucas
3799 John, G. W.	Lucas	3376 Werts, J. L.	Russell
2333 Kirk, C. R.	Chariton	6962 Willey, Frank	Chariton
6050 Letta, Don	Chariton	2962 Yocum, A. L.	Chariton

LYON.

6631 Albertson, E. W.	Inwood	4556 Kaplan, J. G.	Rock Rapids
3850 Brink, H. J.	Doon	4683 Page, W. F.	Alvord
5486 Bruggmann, C.	Rock Rapids	6732 Smidt, A. N.	George
5672 Barkl, Adolph	Rock Rapids	4911 Severin, A. L.	Rock Rapids
5891 Cajacob, J. R.	Little Rock	5752 Vickers, Grant	Inwood
5216 Foley, C. S.	Rock Rapids	2379 Wycoff, W. C.	Rock Rapids
3925 Gurney, C. L.	Doon	4670 Williams, J. R.	Larchwood
4982 Getman, N. E.	Larchwood	4850 Wismer, Alvin E.	Larchwood
6152 Gray, R. O.	George	5693 Webber, B. D.	Rock Rapids
4006 Hoff, J. A.	Doon		

MADISON.

3813 Bales, D. D.	Winterset	3967 Smith, M. E.	Winterset
3325 Catterlin, S. E.	Winterset	4109 Smith, J. E.	Earlham
3470 Griswold, E. B.	Winterset	4641 Schreves, G. W.	St. Charles
4355 Hutchison, J. A.	Truro	5849 Scofield, Clyde.	Macksburg
4304 Henry, W. J.	Winterset	6739 Shreves, B. F.	St. Charles
5124 Hunter, E. G.	Winterset	3416 Tobin, Hazel	Winterset
5760 Horn, C. C.	Winterset	1298 Wyman, J. H.	St. Charles
6524 Hanson, J. F.	Earlham	3000 Wilhelm, T. F.	Winterset
6051 McLucas, V. R.	Winterset	3140 Wetherell, F. D.	Winterset
4279 Peek, J. O.	Winterset		

MAHASKA.

4886	Armour, F. C.	Oskaloosa	2424	Hinton, G. A.	Oskaloosa
6522	Anderson, O. C.	Oskaloosa	2540	Henderson, J. S.	Muchakinock
815	Beardsley, William	Beacon	4249	Kramme, H. W.	Barnes City
1042	Beechler, G. N.	Oskaloosa	1083	Morgan, J. W.	Oskaloosa
1858	Bentley, N. J.	Oskaloosa	4872	McCune, C. H.	Oskaloosa
4148	Blakeslee, J. H.	Oskaloosa	8021	Nugent, H. D.	Oskaloosa
4188	Bushy, J. R.	Rose Hill	2940	Pike, C. O.	Oskaloosa
4215	Bertsch, G. P.	Oskaloosa	8908	Roe, C. P.	New Sharon
5942	Blakeslee, Wm. F.	Oskaloosa	2985	Reel, A. R.	Oskaloosa
8710	Cooper, B. F.	Buxton	6462	Symons, W. J.	Oskaloosa
4486	Cunningham, C. E.	Oskaloosa	82-8	Thomas, J. O.	Muchakinock
5005	Carpenter, Cecil M.	Oskaloosa	3574	Vincent, G. I.	Oskaloosa
4857	Dale, J. R.	Fremont	4859	Vickers, Will	New Sharon
5878	Dale, Dorothea B.	Fremont	4049	Williams, Jack	Buxton
2459	Green, F. E.	Oskaloosa	5468	Waldin, O. D.	Oskaloosa

MARION.

5249	Allen, W. L.	Pella	544	Kirkwood, J. W.	Otley
1417	Brinkhoff, F. W.	Pella	1170	Keables, B. F.	Pella
3519	Bare, O. H.	Pleasantville	1171	Keables, J. B.	Pella
3860	Brinkerhoff, C. W.	Pella	1978	Keables, H. S.	Pella
4575	Barnett, J. M.	Buasey	4862	Langerak, Henry M.	Pella
6744	Bush, E. B.	Knoxville	6808	Miner, L. M.	Pleasantville
402	Cloe, T. R.	Marysville	6956	Noble, C. W.	Pleasantville
4776	Craddick, W. W.	Knoxville	6207	Osborn, E. O.	Knoxville
4829	Cloe, J. W.	Knoxville	4051	Park, L. E.	Tracy
6907	Carle, E. E.	Otley	5961	Stubenrauch, F. D.	Pella
6421	Cook, C. P.	Knoxville	6097	Van Donselaar, Rachelle	Pella
6486	Dorshelmer, G. V.	Knoxville	595	Williams, Thos. J.	Hamilton
2122	Elliott, W. V.	Knoxville	675	Woodruff, M. W.	Knoxville
6546	Elerick, J. M.	Harvey	2746	Wright, L. D.	Knoxville
5872	Gamble, C. A.	Knoxville	5895	Wagenaar, E. O.	Pella
5004	Hollowell, J. E.	Swan	6851	Wright, Ed. J.	Knoxville
4884	Hall, A. P.	Knoxville			

MARSHALL.

5999	Alexander, J. M.	Marshalltown	2885	Morgan, B. A.	Marshalltown
1181	Brimhall, S. M.	State Center	3404	McBride, R. W.	Marshalltown
1382	Bishop, E. W.	State Center	3619	Mershon, G. A.	Liscomb
3980	Brimhall, W. F.	State Center	4552	Maytag, T. H.	Laurel
5462	Batty, Alfred	Marshalltown	4762	McDonald, J. E.	Marshalltown
3558	Barnes, R.	Clemmons	6029	Marcy, F. L.	State Center
5898	Bishop, E. F.	Rhodes	4724	Newman, C. T.	St. Anthony
4298	Dobson, Mrs. M. H.	LeGrande	6965	Newman, W. L.	Marshalltown
4070	Elder, A. T.	Marshalltown	1161	Powers, G. P.	Marshalltown
4168	Evans, W. H.	Marshalltown	2485	Plumb, W. T.	Van Cleave
6111	Everette, Orion	Marshalltown	5594	Porter, G. E.	Marshalltown
6711	Merryman, W. C.	Rhodes	5968	Patterson, Roy S.	Marshalltown
5809	Gould, I. L.	St. Anthony	6480	Penguite, Elmer	Rhodes
5538	Gantz, Frank	St. Anthony	6535	Rice, L. J.	Marshalltown
5904	George, R. E.	St. Anthony	3888	Saeley, C. A.	Marshalltown
5522	Hambleton, W. M.	Melbourne	6983	Smith, M. R.	Laurel
6635	Hyde, C. B.	Marshalltown	606	Ward, J. A.	Gilman
1158	Lander, O. J.	Marshalltown	607	Ward, W. J.	Gilman
4494	Lamer, Wm.	Melbourne	2986	Wiley, F. B.	Marshalltown
5118	Lander, C. J., Jr.	Marshalltown	4847	Woodward, Will C.	Marshalltown
1409	McBride, W. S.	Marshalltown	4585	Will, E. C.	Marshalltown
2611	Mayer, Peter	Marshalltown			

MILLS.

6428	Abel, W. W.	Emerson	1698	Irwin, C. E.	Henderson
6812	Allen, H. M.	Pacific Junction	5374	Kelley, F. W.	Glenwood
4900	Collins, E. O.	Emerson	3629	Leith, G. E.	Henderson
2488	DeWill, C. H.	Glenwood	1214	Moore, W. G.	Silver City
595	Edwards, M. G.	Glenwood	2707	Royce, C. S.	Malvern
388	Flammant, M.	Mineola	4977	Redmond, I. D.	Pacific Junction
8711	Goodwin, F. L. B.	Malvern	5048	Rouse, C. O.	Glenwood
2715	Howe, A. J.	Glenwood	2064	Snerry, L. B.	Hastings
4909	Holtzinger, P. S.	Emerson	5022	Wilson, W. D.	Malvern

MITCHELL.

1699 Amos, Albert.....	Stacyville	6490 Kane, John H.....	Osage
6497 Ackley, N. G.....	McIntire	1027 Lezott, Chas. H.....	Osage
6607 Blowers, H. B.....	Mitchell	2162 McGonigle, W. A.....	St. Ansgar
6290 Dale, C. O.....	Osage	3901 Richmond, E. O.....	Riceville
1099 Evans, W. L.....	Osage	5490 Roche, W. H.....	Riceville
5142 Fish, G. H.....	Osage	5641 Rogers, R. E.....	Osage
5750 Flint, E. R.....	Osage	6957 Roche, J. W.....	Riceville
8223 Goodall, Parr.....	Osage	8044 Sampson, F. W.....	Osage
4938 Green, E. E.....	Osage	4986 Speedling, Floyd.....	Mitchell
6940 Gletty, F. J.....	St. Ansgar	5197 Smith, G. J.....	Riceville
5321 Hood, T. R.....	St. Ansgar	5589 Smith, Francis C.....	Osage
6001 Kane, W. P.....	Osage	5617 Ward, W. H.....	McIntyre

MONONA.

4939 Backer, N. G.....	Whiting	2808 Mann, A. W.....	Onawa
6647 Blair, A. O.....	Whiting	3926 Minthorn, M. F.....	Moorehead
6941 Bass, R. W.....	Mapleton	581 Minthorn, Edith.....	Moorehead
4037 Egl, E. E.....	Onawa	3154 Putzier, J. H.....	Mapleton
6590 Fenne, L. N.....	Ute	83 Rust, David.....	Whiting
5830 Fisher, E. E.....	Rodney	5689 Selleck, E. C.....	Onawa
893 Griffin, F.....	Mapleton	5297 Towers, J. J.....	Whiting
4513 Griffin, C. F.....	Mapleton	5907 West, A. A.....	Castana

MONROE.

3104 Bartram, R. T.....	Albia	5205 Murray, W. P.....	Melrose
4999 Baecher, W. G.....	Blencoe	5443 Nordgren, E. J.....	Lovilla
4192 Carden, G. R.....	Albia	5924 Paulline, J. T.....	Albia
4737 Haffner, F. F.....	Hynes	357 Roberts, J. W.....	Albia
6553 Hilliard, V. E.....	Albia	6413 Reel, G. W.....	Albia
4978 Johnson, D. W.....	Albia	6900 Stein, J. R.....	Tracey
4525 Morrison, T. L.....	Albia	6707 Saunders, C. H.....	Albia
5498 Miller, G. D.....	Albia	5852 Trent, W. W.....	Albia

MONTGOMERY.

121 Arta, David.....	Red Oak	8448 Mollenhoff, J. P.....	Stanton
2929 Carr, G. T.....	Grant	5974 Moore, R. R.....	Villisca
9556 Childs, E. W.....	Villisca	6334 Morgan, T. W.....	Red Oak
5555 Criswell, J. W.....	Villisca	4970 Ordway, Cora.....	Elliott
6631 Casey, D. W.....	Red Oak	2942 Platt, G. M.....	Red Oak
3845 Ericsson, G. B.....	Red Oak	2419 Stillians, W. A.....	Villisca
5393 Flood, C. A.....	Villisca	3755 Shank, H. W.....	Red Oak
308 Hinchman, A. C.....	Red Oak	5125 Starr, Geo. A.....	Red Oak
5394 Hinchman, C. B.....	Red Oak	5278 Shockley, Ned.....	Red Oak
2842 Hine, C. W.....	Stanton	6980 Sturges, W. H.....	Red Oak
6527 Halbert, C. B.....	Elliott	5377 Shepard, J. Frank.....	Villisca
6761 Hadley, C. J.....	Elliott	6952 Thomason, E. E.....	Foster
2816 Lynch, L. J.....	Villisca	6782 Tice, T. A.....	Foster
4513 Luce, John.....	Villisca	6356 Williams, I. T.....	Foster

MUSCATINE.

1294 Agnew, D. G.....	Wilton Junction	3110 Haverkamp, J. J.....	Muscatine
3116 Busch, W. C. A.....	Muscatine	6909 Harris, R. L.....	Muscatine
4174 Barkalow, W. B.....	Muscatine	1800 Krehe, J. T.....	Muscatine
4256 Halstead, Alice L.....	Muscatine	2388 Kuchmann, J. T.....	Muscatine
3031 Cope, W. L.....	Muscatine	6004 Kincaid, G. E.....	Muscatine
3630 Carl, F. F.....	Nichols	5930 Lang, William.....	Muscatine
6590 Coady, J. J.....	Muscatine	1841 Marolf, J. F.....	Wilton Junction
6970 Cone, W. E.....	Muscatine	3746 Moore, G. A.....	West Liberty
898 Deutschmann, August.....	Muscatine	6931 Morgan, A. W.....	Muscatine
1325 Daugherty, J. B.....	Muscatine	4611 McBride, W. H.....	Muscatine
6185 Dieterich, J. P.....	Muscatine	50 Neaper, F. T.....	Muscatine
5738 Embre, G. B.....	West Liberty	1299 Pickering, Chas. E.....	West Liberty
4053 Farmer, R.....	Wilton Junction	1441 Reimcke, G. A.....	Muscatine
5652 Fishburn, E. C.....	Muscatine	4993 Tabler, E. F.....	West Liberty
897 Geiss, Henry.....	Muscatine	6174 Thiesen, H. C.....	Muscatine
3936 Graham, E. L.....	Muscatine	1647 Zeisig, C. A.....	Moscow
6973 Green, F. H.....	Muscatine		

O'BRIEN.

1206 Ayers, W. L.....	Sheldon	4220 Ady, R. W.....	Sheldon
4544 Algyer, C.....	Sanborn	4969 Barrager, E. L.....	Sheldon

O'BRIEN—CONTINUED.

6221 Barker, W. H.	Sanborn	2007 Price, L. J.	Sutherland
4610 Culver, E. R.	Sheldon	2330 Parker, E. W.	Sutherland
6557 Crum, R. R.	Pringhar	6372 Palmquist, A. F.	Hartley
3318 Daman, F. J.	Pringhar	6384 Rust, E. G.	Pringhar
6057 Dewey, J. E.	Hartley	3332 Stewart, D. T.	Hartley
4035 Fitton, J. F.	Paullina	5199 Shipley, L. U.	Sheldon
5658 Hays, S. C.	Pringhar	5222 Shipley, Henry	Sheldon
6007 Koltermann, G. H.	Sanborn	6731 Shipley, Geo. W.	Sheldon
5065 Miller, M. E.	Hartley	5171 Watters, D. J.	Pringhar
5597 McCready, A. R.	Hartley		

OSCEOLA.

3339 Carmichael, J. H.	Ashton	6478 Miller, W. B.	Sibley
3923 Cook, C. A.	Ocheyedan	6842 Miers, F. W.	Ocheyedan
5066 Carmichael, Lola	Ashton	6008 Oeweller, Albert	Ashton
1236 Giles, D. R.	Harris	1328 Parker, W. L.	Sibley
5058 Graves, F. W.	Melvin	4512 Parker, C. E.	Sibley
2910 Hamilton, R. G.	Ocheyedan	3058 Stevens, W. B.	Sibley
3551 Jocelyn, E. S.	Ocheyedan	5951 Ung, O. F.	Harris
1210 Lawrence, W. R.	Sibley		

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6458 Anderson, Joseph	Clarinda	3046 Jay, George	Shenandoah
323 Burrows, J. P.	Clarinda	5454 Jackson, T. O.	Shenandoah
360 Bagnall, J. I.	College Springs	5605 Keeran, J. B.	Blanchard
2919 Benge, A. T.	Humeston	1706 Lundy, W. L.	Clarinda
4149 Blair, F. L.	Clarinda	5556 Large, A. F.	Braddyville
6274 Broodeen, L. L.	Essex	5906 Limbocker, E. R.	Clarinda
6395 Beecher, F. W.	Clarinda	5421 Morrow, C. E.	Blanchard
6912 Beach, B. F.	Shenandoah	5458 McClymonds, S. E.	College Springs
3431 Cavender, B. I.	Clarinda	6391 McConoughey, E. H.	Shenandoah
6224 Clem, S. M.	Essex	2918 Putnam, T. L.	Shenandoah
4221 Eaton, H. E.	Essex	5418 Phillips, W. O.	Clarinda
4179 Gause, M.	Coin	5337 Quist, Wm.	Essex
2461 Hite, R. B.	Clarinda	2533 Robbins, O. A.	Coin
2535 Henderson, W. A.	Clarinda	5700 Sanders, W. O.	Clarinda
4016 Hunt, A. Y.	Clarinda	6654 Sutton, R. R.	Shenandoah
6947 Hawley, H. C.	Clarinda	1241 Webster, J. O.	Shenandoah

PALO ALTO.

4963 Anderson, J. H.	Ruthven	5012 Easton, E. K.	West Bend
5644 Ankema, S. E.	Cylinder	6383 Farrell, Anna W.	Rodman
5424 Bartholow, E. L.	Ayrshire	3307 Herley, G. F.	Emmetsburg
1392 Burnes, J. O.	Emmetsburg	5230 King, R. C.	Emmetsburg
4553 Barrett, W. H.	Wallard	5291 Large, J. B.	Ruthven
6743 Blue, F. A.	Emmetsburg	5333 Lyman, D. J.	Emmetsburg
3071 Cuplin, P. P.	West Bend	2750 Stemetz, John	Emmetsburg
3723 Collins, Carrie S.	Rodman	556 Wolfgang, A. J.	Emmetsburg
4313 Collins, T. D.	Graettinger	4014 Weaver, O. A.	Curlew

PLYMOUTH.

6314 Ankema, M. A.	Le Mars	6337 March, W. L.	Akron
4421 Bernhardt, J. W.	Le Mars	5234 Mammen, W. H.	Struble
3733 Cobb, E. F.	Akron	4944 Nigg, H. A.	Merrill
230 Diehl, P. H.	Le Mars	6127 Qualey, Martin	Westfield
6333 Duster, P. J.	Remsen	4141 Sartori, Anton	Le Mars
5632 Differdang, J. T.	Le Mars	4972 Spotts, S. W.	Le Mars
6315 Howes, G. H.	Le Mars	3019 Schneider, C. F.	Kingsley
6243 Jastram, A. H.	Remsen	6144 Schmidt, J. H.	Le Mars
6327 Kussian, A. J.	Kingsley	1740 Schultz, A. F.	Remsen
3930 McInert, F. G.	Remsen	2036 Wilder, J. J.	Kingsley
4144 Moad, C. L.	Struble	3333 Wilson, C. W.	Kingsley
4164 Moad, N.	Akron	5734 Wernli, L. S.	Le Mars
5092 Moad, N. P.	Akron		

POCAHONTAS.

3317 Beam, C. H.	Pocahontas	7327 Boyer, H. B.	Fonda
5230 Babcock, H. M.	Laurens	6901 Burson, A. G.	Fonda
5300 Bevelhimer, B.	Varina	1370 Carroll, J. M.	Laurens
6743 Butler, W. G.	Rolfe	3133 Core, G. W.	Rolfe

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5287 Crawford, C. A.	Fonda	5910 Lewis, P. T.	Fonda
4328 Colgan, F. L.	Rolfe	5265 Lohse, H. W.	Rolfe
4945 Day, G. W.	Plover	4097 Lewis, A. W.	Palmer
6046 Dally, H. J.	Fonda	4959 Norton, N. L.	Fonda
6047 Dally, H. C., Jr.	Fonda	3866 Patty, C. O.	Fonda
6354 Daubenberger, E. V.	Fonda	5229 Pohl, E. B.	Ware
2908 England, L. E.	Gilmore City	4487 Reed, C. G.	Laurens
4715 Freeman, F. E.	Pocahontas	3820 Starr, J. W.	Pocahontas
6002 Grover, R. O.	Pocahontas	8577 Sheldon, J. B.	Havaloock
6117 Getz, J. W.	Plover	6171 Souly, T. A.	Rolfe
6785 Glazier, J. J.	Fonda	6786 Tigner, R. M.	Laurens
6758 Gerard, H. H.	Rolfe	8248 Webb, C. M.	Rolfe
3464 Higgins, J. W.	Laurens	3908 Wiewel, Joseph.	Rolfe
5504 Henning, A. F.	Rolfe	6683 Weiland, W. J.	Laurens
5829 Johnston, B. M.	Rolfe	4767 Young, Jno.	Varena
3441 Keasing, J. J.	Palmer	6640 Zimmerman, W. J.	Pocahontas

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4943 Aldrich, F. S.	Des Moines	6878 Johnson, C. A.	Des Moines
5706 Allen, D. A.	Des Moines	6453 Jones, R. E.	Des Moines
2511 Bauer, Wm. S.	Des Moines	6481 Jackson, F. D.	Des Moines
3437 Barnard, C. G.	Des Moines	5715 Kegel, Karl.	Des Moines
4311 Bauer, J. A.	Des Moines	5920 Kautenberger, N.	Bondurant
5406 Buck, E. M.	Des Moines	5738 Kilgore, W. B.	Des Moines
6085 Bisher, W. L.	Des Moines	5920 Kautenberger, Nick.	Bondurant
6047 Bistricky, E. F.	Des Moines	6437 Kreader, R. E.	Grimes
6286 Braun, D. A.	Des Moines	4853 Lander, J. A.	Valley Junction
6587 Bryant, F. O.	Des Moines	732 Lichty, Norman.	Des Moines
6675 Boos, F. H.	Des Moines	1718 Loper, J. C.	Des Moines
1989 Chamberlain, Lowell.	Des Moines	2010 Loper, J. H.	Des Moines
2234 Cogswell, S. G.	Des Moines	2968 Lawrence, E. O.	Des Moines
3653 Cox, G. W.	Des Moines	3531 Lawrence, E. S.	Des Moines
4202 Cox, J. E.	Des Moines	5921 Landfors, E.	Des Moines
4332 Crawford, H. B.	Des Moines	6509 Loes, J. R.	Des Moines
4388 Cowles, V. D.	Des Moines	981 Miles, A. H.	Des Moines
4536 Conklin, W. S.	Des Moines	3073 McKay, F. P.	Des Moines
5154 Coon, L. B.	Des Moines	3443 Mahanke, George.	Des Moines
3791 Durette, R. G.	Des Moines	5643 Morrison, E. D.	Valley Junction
4387 Davis, F. R.	Polk City	4269 McArthur, F. H.	Des Moines
5066 Durette, Ella B.	Des Moines	4438 McCurnin, T. P.	Des Moines
6980 Draper, E. E.	Runnells	4463 McKay, C. A.	Des Moines
6724 Darland, F. L.	Des Moines	4667 McConaughy, E. R.	Des Moines
6919 Downing, E. A.	Des Moines	6606 McEnroe, G. A.	Des Moines
8215 Eaton, F. N.	Valley Junction	4946 Miles, C. C.	Des Moines
4193 Eade, J. W.	Des Moines	5325 Miskimins, H. M.	Des Moines
6967 Elliott, W. J.	Des Moines	3189 Norton, C. F.	Des Moines
5183 Ferncy, J. L.	Des Moines	3995 Namur, Charles.	Des Moines
5785 Fuller, Anna C.	Des Moines	5513 Nesting, C. O.	Des Moines
3964 Gaff, J. E.	Des Moines	3107 Olsen, M. J.	Des Moines
4122 Gibson, R. M.	Des Moines	481 Parker, J. H.	Des Moines
4189 Graham, W. A.	Des Moines	4039 Pierson, L. R.	Des Moines
5495 Guth, T. J.	Des Moines	4384 Parsons, A. H.	Grimes
6079 Gruener, A. B.	Des Moines	5569 Pickerrill, J. R.	Des Moines
6306 Gruener, W. J.	Des Moines	5537 Petree, J. E.	Des Moines
1130 Haegele, H. W.	Des Moines	6041 Philleo, A. E.	Des Moines
1518 Hansen, H. C.	Des Moines	6330 Paradise, W. E.	Des Moines
1637 Harlan, C. E.	Des Moines	6967 Perriton, H. A.	Des Moines
1989 Hammer, Alfred.	Des Moines	132 Rogg, C. W.	Des Moines
2066 Hume, J. E.	Mitchellville	902 Reichard, D. H.	Des Moines
2242 Hammer, A. G.	Des Moines	2350 Randall, C. T.	Des Moines
3974 Horsman, U. O.	Des Moines	2340 Randolph, Frank.	Des Moines
3748 Herry, C. B.	Des Moines	5544 Rogers, E. E.	Des Moines
4327 Hoagland, Fred F.	Des Moines	4093 Reichard, W. F.	Des Moines
6069 Hanford, G. A.	Des Moines	4550 Rehkopf, A. H.	Des Moines
3774 Hufford, W. F.	Des Moines	6191 Ryan, J. H.	Des Moines
4013 Homann, Richard.	Des Moines	6372 Reynolds, C. E.	Des Moines
4142 Hervey, W. P.	Des Moines	6361 Rice, J. H.	Des Moines
4490 Hurlbut, J. R.	Des Moines	1123 Schroeder, Frederick.	Des Moines
4480 Harrod, H. B.	Des Moines	1129 Sandholm, John.	Des Moines
5167 Hanch, Harry H.	Des Moines	1685 Soners, Webb.	Des Moines
6013 Huston, H. B.	Des Moines	1712 Schmucker, D. R.	Des Moines
5838 Hanson, A. R.	Des Moines	2015 Shaffer, Lewis.	Altoona
6055 Hess, J. W.	Des Moines	2129 Spaulding, S. J.	Des Moines
5624 Higgins, E. A.	Des Moines	2344 Schmidt, Louis.	Des Moines
6683 Heller, G. W.	Altoona	2969 Stream, Curtis.	Des Moines
3943 Irwin, W. P.	Valley Junction	3105 Sheldon, Frank.	Des Moines
497 Jancs, E. L.	Des Moines	3967 Shaffer, W. B.	Des Moines
3354 Johnson, J. A.	Des Moines	3392 Shope, C. C.	Des Moines
3931 Johnson, E. L.	Des Moines	4075 Stroud, J. S.	Des Moines
6243 Jones, F. E.	Des Moines	4263 Smith, R. H.	Des Moines

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4315 Seyfert, H. L.....	Valley Junction	4538 Veatch, E. S.....	Des Moines
5244 Stroud, P. E.....	Des Moines	8168 Whitney, E. F.....	Des Moines
5849 Stronder, M. R.....	Des Moines	8411 Wood, Frank.....	Des Moines
5956 Switzer, A. W.....	Runnells	8778 Wood, Geo. W.....	Des Moines
6024 Schmalzried, E.....	Des Moines	8786 Winfrey, T. H.....	Hastie
6537 Sperry, E. B.....	Des Moines	8940 Waterbury, F. C.....	Des Moines
6683 Schuneman, B. W.....	Des Moines	9380 Weeks, Carl.....	Des Moines
6670 Sheark, C. W.....	Des Moines	6118 Woodcock, G. C.....	Valley Junction
6734 Smith, A. N.....	Des Moines	6689 Wales, F. E.....	Des Moines
6777 Schaeffer, John.....	Elkhart	6738 Wilson, R. O.....	Elkhart
5239 Twining, E. LeRoy.....	Des Moines	6653 Witherall, Pearl.....	Des Moines
5599 Thompson, E. T.....	Des Moines	6972 Wicks, J. H.....	Des Moines
6494 Ulich, J. J.....	Des Moines		

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828 Atkins, J. B.....	Council Bluffs	296 Johnson, S. M.....	Carson
8817 Andrews, J. J.....	Council Bluffs	237 Johnson, Ella S.....	Carson
4187 Anderson, W. H.....	Council Bluffs	2816 Kettlewell, Chas. L.....	Carson
6256 Anderson, R. E.....	Council Bluffs	4579 Lehman, Max.....	Minden
6891 Arnette, F. H.....	Council Bluffs	5811 Letson, G. A.....	Council Bluffs
1535 Bruce, O. M.....	Walnut	5978 Lauvstad, J. P.....	Avoca
3074 Berringer, Will J.....	Council Bluffs	6397 Lindsay, H. H.....	Avoca
8163 Brown, O. H.....	Council Bluffs	2374 Morgan, Dell G.....	Council Bluffs
4524 Biddinger, L. H.....	Council Bluffs	8185 Maxwell, W. J.....	Avoca
6676 Bronson, R. L.....	Council Bluffs	4637 McElroy, E. K.....	Ayrshire
2740 Camp, J. W.....	Council Bluffs	4637 Morgan, F. H.....	Council Bluffs
3704 Camp, G. F.....	Council Bluffs	4779 Massenbunrg, Lou.....	Council Bluffs
5654 Campbell, LeRoy.....	Council Bluffs	5637 Miller, W. C.....	Macedonia
5670 Cash, W. F.....	Underwood	5835 Mundt, C. E.....	Avoca
6465 Cowles, E. G.....	Council Bluffs	6935 Monroe, L. R.....	Council Bluffs
6936 Carrigg, Blanche M.....	Council Bluffs	5901 Purdy, A. L.....	Neola
1653 De Haven, J. C.....	Council Bluffs	2493 Robertson, J. C.....	Council Bluffs
3997 Davis, G. S.....	Council Bluffs	2924 Rogan, Wm. H.....	Council Bluffs
5592 Dabney, N. J.....	Oakland	4445 Rolfe, Herman.....	Neola
6920 Doty, LeRoy.....	Council Bluffs	8125 Stemple, G. L.....	Macedonia
3439 Elliott, S. S.....	Council Bluffs	8554 Sellers, F. E.....	Council Bluffs
5781 Fletcher, G. W.....	Council Bluffs	4218 Swann, C. P.....	Oakland
6453 Flamant, A. M.....	Council Bluffs	4437 Smart, F. G.....	Hancock
2379 Gardner, W. W.....	Avoca	4527 Schroeder, Frank.....	Council Bluffs
349 Harle, H. D.....	Council Bluffs	4827 Spaulding, Joe.....	Council Bluffs
2959 Howard, G. R.....	Neola	2474 Thompson, E. C.....	Walnut
4943 Hansen, Geo.....	Council Bluffs	6738 Thompson, J. V.....	Walnut
4966 Harlan, W. D.....	Macedonia	5235 Whaley, S. E.....	Council Bluffs
5310 Harrison, B. Z.....	Oakland	8892 Wyland, A. O.....	Underwood
5704 Henry, J. I.....	Council Bluffs	4483 Wesner, F. W.....	Council Bluffs
6649 Hicks, A. M.....	Neola		

POWESHIEK.

5112 Alley, C. E.....	Grinnell	6228 Meyers, W. A.....	Grinnell
3638 Cutter, C. F.....	Deep River	6898 Mullins, W. R.....	Grinnell
6067 Carlson, L. D.....	Brooklyn	1118 Ormiston, J. S.....	Hartwick
6498 Cain, C. K.....	Montezuma	3914 Peck, S. Z.....	Grinnell
5086 Davis, Ella.....	Malcom	4896 Platt, J. H.....	Montezuma
6638 Findley, O. E.....	Grinnell	1152 Quire, J. C.....	Searsboro
4492 Elerick, J. S.....	Searsboro	3242 Rainsburg, A. P.....	Brooklyn
3505 Griffin, C. J.....	Montezuma	4630 Rainsburg, C. T.....	Brooklyn
3857 Hedges, T. M.....	Grinnell	5463 Rodgers, J. G.....	Montezuma
5152 Hedges, Grace L.....	Grinnell	6052 Rust, R. R.....	Grinnell
5601 Hubbert, F. P.....	Grinnell	2613 Shrader, F. P.....	Brooklyn
6404 Ham, Otis O.....	Brooklyn	3730 Snider, H. K.....	Grinnell
620 Johnson, J. G.....	Grinnell	4930 Talbot, A. D.....	Brooklyn
3901 McConnell, P. G.....	Grinnell	6550 Viets, Harry L.....	Grinnell
5599 Marcan, W. A.....	Montezuma	4170 Winchell, J. E.....	Malcom

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8129 Asbury, T. P.....	Tingley	911 Horne, John.....	Mt. Ayr
4975 Armitage, A. C.....	Elliston	2372 Jones, T. B.....	Beaconsfield
5300 Asbury, J. W.....	Mt. Ayr	6948 Jones, B. G.....	Beaconsfield
5408 Armitage, Daisy Dean.....	Elliston	3084 Merrill, John T.....	Mt. Ayr
5542 Badler, E. L.....	Kellerton	6992 Middlesworth, W. C.....	Mt. Ayr
4243 Cuptin, H. S.....	Kellerton	4941 McClanahan, W. A.....	Redding
6083 Carmean, G. W.....	Kellerton	4407 Reed, H. J. C.....	Diagonal
1645 Eslick, T. B.....	Benton	4590 Swallow, Geo.....	Knowlton
4114 Elder, W. E.....	Tingley	5259 Seaton, S. H.....	Delphos
4780 Elder, Alice Waugh.....	Tingley	5548 Trimble, Rose E.....	Elliston

SAC.

3445 Andre, T. J.	Schaller	6727 George, A. B.	Lake View
1182 Brimhall, C. W.	Schaller	2214 Gesell, C. L.	Sac City
3502 Brooks, W. R.	Schaller	6538 Henrikson, Jesse	Odebolt
5305 Brimhall, C. W.	Schaller	5311 Hirona, W. P.	Early
4687 Bleakney, E. L.	Early	4077 Johnson, F. W.	Ulmer
4947 Barkl, C. E.	Sac City	3890 Kessler, Joseph	Auburn
4366 Basawaw, G. W.	Sac City	5174 Kennedy, J. D.	Auburn
4956 Cooke, S. R.	Wall Lake	5392 McDonald, Andrew	Early
5871 Deut, J. F.	Lake View	5185 Page, F. W.	Wall Lake
5810 DeLooy, V. S.	Odebolt	3536 Rowe, E. E.	Early
3571 Dunn, J. F.	Lake View	2774 Sifford, Charles	Lake View
6849 Eugstrom, J. A.	Odebolt	8122 Selby, S. D.	Odebolt
3690 Eckerman, H. Z. L.	Early	3927 Smith, C. H.	Odebolt
3037 Findley, Will J.	Sac City	5988 Scott, F. J.	Sac City
5980 Forrester, C. A.	Lytton	4541 Smale, Hubert	Sac City
5403 Graffunder, C. L.	Nemaha	6535 White, E. E.	Hawarden
4920 Graham, J. W.	Early		

SCOTT.

2 Binford, Edmund	Dixon	3628 Koechert, P. H.	Davenport
449 Ballard, J. W.	Davenport	3769 Kistenmacher, E. J.	Davenport
731 Busch, T. H.	Davenport	4116 Koch, Francis J.	Davenport
4390 Braunlich, H. G.	Davenport	4712 Kleuze, J. E.	Davenport
4967 Ballard, H. W.	Davenport	5711 Kurmeider, J. P.	Davenport
6641 Brueckner, T. G.	Davenport	5238 Lafrenz, H. T.	Davenport
1009 Clark, E. A.	Princeton	5320 Louffer, G. G.	Davenport
3647 Chase, C. V.	Davenport	6077 Lage, Wm	Davenport
4361 Campbell, L. E.	Davenport	6418 McCarl, Harrie L.	Davenport
4459 Carlisle, G. M.	Buffalo	535 Meisner, Amilius	Davenport
4784 Cope, F. C.	Davenport	3801 Moetzel, E. A.	Davenport
5589 Carstena, L. P.	Davenport	4947 Moffatt, J. H.	Davenport
2900 Driscoll, J. E.	Davenport	6675 Martin, George H.	Davenport
4207 Doyle, W. S.	Davenport	3590 Nadler, Frank	Davenport
4275 Dorgan, J. J.	Davenport	6819 Neufeld, Frank	Davenport
4495 Danquard, Theodore	Davenport	6218 Pfabe, R.	Davenport
443 Emels, H. A.	Davenport	1895 Riepe, A. C. H. E.	Davenport
6164 Emels, A. I.	Davenport	447 Schlegel, Gustav	Davenport
6180 Eipper, August	Buffalo	2038 Schumacker, H.	Walcott
6417 Emels, Hugo G.	Davenport	2397 Schlegel, C. E.	Davenport
470 Harrison, C. E.	Davenport	6275 Sadler, P. M. A.	Davenport
5938 Hansen, M. B.	Davenport	6854 Weber, J. S.	Davenport
436 Kemmerer, C. P.	Eldridge	6860 Wellehan, Mary M.	Davenport

SHELBY.

4688 Arrasmith, P. L.	Shelby	4961 Gregerson, James	Kirkman
2634 Branson, W. S.	Irwin	6160 Holloway, C. L.	Westphalia
3899 Berry, A. S.	Panama	6305 Morrison, W. H.	Jamaica
6287 Branson, E. S.	Irwin	5466 McPheeters	Harlan
5916 Downs, M. B.	Harlan	5241 Pederson, G. M.	Harlan
631 Frost, L. D.	Harlan	5125 Starr, G. A.	Port-mouth
1216 Fagan, H. M.	Shelby	5969 Schroeder, B. H.	Harlan
1806 Fretz, Menzo	Harlan	2207 Westbrook, C. H.	Manilla
5986 Fuller, H. M.	Kirkman	6429 Waters, S. H.	Irwin

SIOUX.

4018 Anderson, J. H.	Hall	5568 O'Connor, T. E.	Maurice
2263 Brush, G. W.	Sioux Center	2335 Pember, H. H.	Rock Valley
3491 Brink, Wilber	Boyd	4635 Platt, T. O.	Hawarden
5522 Blaeser, W. A.	Hawarden	4991 Parker, E. E.	Ireton
6523 Banning, F. W.	Granville	5982 Parker, Jr., F. O.	Maurice
4627 Coad, N. G. O.	Hull	5370 Searle, H. L.	Rock Valley
2922 De Kruif, P. J.	Orange City	6267 Schalekamp, H. J.	Sioux Center
6056 Dykstra, R. R.	Orange City	4623 Schaul, Alphonse	Alton
3456 Geeselschap, A. F.	Orange City	6479 Schemmer, John	Rock Valley
4995 Grady, M. J.	Hawarden	6899 Seamanada, A. L.	Chatsworth
1695 Harlan, L. C.	Hawarden	6778 Scott, C. A.	Granville
3712 Harrison, J. C.	Maurice	6970 Thomas, E. U.	Alton
4287 Hollman, J. H.	Hull	4963 Vosburg, P. B.	Granville
6289 Koenig, G. W.	Rock Valley	5531 Varnum, Ray	Hospers
6822 Lubbers, Henry	Orange City	6617 Van den Berg, Guy	Alton
2578 McBride, C. M.	Rock Valley	3728 Whitfield, Arthur	Hawarden
4651 Mosher, A. H.	Ireton		

STORY.

6986	Anderson, Otto	Sheldahl
952	Briggs, S. E.	Nevada
2981	Bosworth, L. M.	Ames
8177	Benedict, George	Maxwell
8959	Briggs, George H.	Nevada
5988	Bauer, A.	Ames
6090	Ball, C. F.	Nevada
6965	Bakka, L. H.	McCallsburg
5792	Campbell, C. E.	Collins
8987	Cagwin, J. E.	Story City
4271	Carver, E. J.	Colo
5588	Clutter, B. A.	Ames
6382	Cooper, T. C. S.	Ames
6376	Clift, G. E.	Zearing
6284	Coye, C. H.	Ames
6909	Coye, E. L.	Ames
8949	Davendorf, W. A.	Story City
6225	Drybread, J. E.	Nevada
5728	French, C. B.	Maxwell
1468	Gandrup, W. D.	Story City
5589	Gandrup, H. D.	Story City
2549	Hostetter, J. I.	Colo
4686	Hermanson, T. P.	Roland
5865	Hoag, L. N.	Ames

6161	Hayes, G. R. B.	Kelley
6926	Harlan, R. N.	Colo
6708	Hopkins, R. H.	Colo
4773	Ingladue, E. C.	Zearing
8644	Judisch, George	Ames
5532	Kahrs, E. S. D.	McCallsburg
6387	Kramme, G. L.	Cambridge
2363	Lande, Amos	Slater
4398	Loughran, T. J.	Story City
5851	Laxvold, H. H.	Cambridge
6583	Lockwood, L. D.	Maxwell
4895	Madsen, M. P.	Story City
6121	Miller, C. T. F.	Fernald
6770	Moe, Alfred	Roland
8209	Nichols, W. E.	Nevada
6619	Nixon, A. W.	Nevada
2126	Pierce, G. R.	Salem
4852	Persons, A. F.	Cambridge
6323	Pauline, H. O.	Huxley
5885	Severin, J. C.	Zearing
6177	Shearer, G. N.	Collins
8858	Thomas, C. H.	Cambridge
5082	Winans, L. P.	Slater
5865	Wiese, Wm. I.	Huxley

TAMA.

4910	Boyd, J. W.	Gladbrook
6005	Benech, Emil	Toledo
6061	Bestenlehner, A. G.	Toledo
6328	Benech, Theo	Toledo
1253	Coffin, R. M.	Tama City
4760	Croesman, W. P.	Tama City
5890	Cook, R. L.	Toledo
5487	Christenson, S. A.	Toledo
5552	Coulson, H. O.	Chelsea
6298	Challed, C. W.	Chelsea
2991	Douglas, E. F.	Dysart
5845	Fullerton, L. L.	Tama
8479	Grimm, W. H.	Traer
4942	Gerard, S. A.	Gladbrook
6467	Hild, R. J.	Garwin
6005	Hild, A. E.	Montour
4405	Kullmer, J. H.	Dysart
4944	Kallm, J. L.	Chelsea
4952	Knudson, L. C.	Montour

6949	Kupka, A. J.	Chelsea
6021	Lumsden, W. T.	Dysart
2191	Naureth, J. H.	Traer
1249	Stiger, Stephen	Toledo
1253	Soleman, Henry	Tama City
8217	Springer, George L.	Garwin
4182	Stone, C. F. M.	Tama
4301	Scrimgeour, C. A.	Montour
4398	Stewers, Harry	Traer
4581	Sloan, W. C.	Traer
4757	Shugart, N. K.	Kiberon
5011	Smith, L. B.	Gladbrook
5021	Soleman, F. A.	Tama
6283	Shugart, G. Z.	Chelsea
6278	Stayskal, Joseph	Montour
5941	Thompson, Geo. H.	Montour
8523	Warren, B. C.	Montour
4399	Willett, C. A.	Montour

TAYLOR.

8	Babson, J. E.	Blockton
2908	Bibbins, A. L.	Bedford
2924	Bennett, T. W.	Lenox
1151	Childs, H. A.	Lenox
5898	Childs, A. A.	Lenox
5909	Clark, T. J.	Gravity
5612	Dean, W. E.	Bedford
5440	Evans, J. E.	Clearfield
8565	Fritz, W. I.	Clearfield
1864	Golliday, A. M.	Bedford
6961	Gaumer, J. E.	Bedford
2155	King, A. E.	Blockton
8739	Love, Charles	Bedford
2149	Maxwell, J. P.	Clearfield
2518	McColm, J. T.	Gravity
8858	McColm, J. L.	Gravity
4895	Malden, W. J.	Lenox
5457	McColm, C. W.	New Market

4618	Nelson, C. N.	Bedford
6940	Patton, Harry T.	Clearfield
6908	Peterie, A. L.	Gravity
6940	Patton, H. T.	Clearfield
6422	Peterie, H. M.	Gravity
1876	Rhoades, H. B.	Bedford
2387	Rockwell, E. B.	Bedford
4399	Roberts, A. B.	New Market
6258	Ryerson, Earl	Conway
6959	Roberts, E. W.	Bedford
1685	Scroggs, J. P.	Lenox
5941	Stimson, M. T.	Gravity
6003	Stephenson, R. B.	Clearfield
2558	Tyler, O. D.	Lenox
6341	Underwood, J. J.	Sharpsburg
3604	Wright, Frank	Conway
4214	Walker, J. C.	New Market
5875	Walker, O. G.	New Market

UNION.

4569	Aldrich, Ed. A.	Creston
4671	Atkinson, G. H.	Creston
824	Bailey, A. S.	Lorimer
4902	Beerle, J. F.	Creston
5932	Burke, F. J.	Creston
6554	Brenan, M. J.	Creston
244	Cherry, J. W.	Creston
2194	Christy, W. D.	Shannon City
4005	Coltrane, N. B.	Afton
5932	Copeland, B. E.	Cromwell
8158	Foster, H. O.	Creston
6978	James, K. L.	Creston
1705	Kees, John	Creston

2636	Leach, J. W.	Creston
4748	Logan, G. W.	Shannon City
4232	McDaniel, A. B.	Afton
722	Norton, H. M.	Kent
5452	Newcomb, G. D.	Creston
4230	Sullivan, E. F.	Afton
5018	Snoko, J. F.	Lorimer
5225	Shields, Wm. M.	Afton
3949	Walker, L. M.	Afton
5395	Wilson, J. A.	Lorimer
5655	Wolf, Willis W.	Lorimer
5990	White, M. P.	Shannon City

VAN BUREN.

6481	Angerson, J. G.....	Bonaparte	5708	Jericho, Albert	Cantril
1951	Blackman, B. P.....	Bonaparte	6764	Jackson, G. D.....	Bonaparte
2975	Baker, W. S.....	Farmington	8085	Kick, Fred.....	Farmington
4628	Buck, C. W.....	Birmingham	5618	Kinsey, Carl.....	Keosauqua
5315	Brunk, L. D.....	Bonaparte	3827	McKibben, C. A.....	Mt. Sterling
18	Cross, J. T.....	Farmington	810	Ragsdale, J. S.....	Birmingham
8897	Davis, J. P.....	Bonaparte	2876	Rice, J. A.....	Milton
6387	Dunlap, J. W.....	Keosauqua	5820	Roberts, F. H.....	Keosauqua
5346	Ford, D. H.....	Cantril	680	Strickling, J. C.....	Keosauqua
6096	Franks, C. P.....	Farmington	869	Summers, L. F.....	Milton
4084	Henderson, J. M.....	Milton	5078	Sloan, J. A.....	Leando
6825	Hiatt, A. R.....	Stockhart	4049	Williams, Jack.....	Keosauqua
6762	Hatton, R. E.....	Birmingham			

WAPELLO.

5448	Adams, O. E.....	Ottumwa	5116	Moore, Ed. J.....	Eldon
8346	Beck, W. E.....	Ottumwa	5475	Mynard, W. H.....	Ottumwa
8811	Burns, J. F.....	Eddyville	5595	Mills, F. W.....	Ottumwa
6639	Baker, Robert.....	Eldon	5385	Nordgren, E. E.....	Ottumwa
1007	Castle, C. A.....	Ottumwa	5094	Orr, A. L.....	Ottumwa
8888	Clarke, F. B.....	Ottumwa	1964	Pelham, W. S.....	Kirkville
4229	Campbell, R. M.....	Ottumwa	4071	Phelp, O. W.....	Eldon
5460	Campbell, Boston.....	Ottumwa	6868	Peterle, A. L.....	Dean
6796	Cadawalder, J. M.....	Ottumwa	176	Reynolds, A. J.....	Agency
3842	Downs, A. W.....	Ottumwa	4027	Robinson, A. J.....	Ottumwa
1004	Elliott, W. D.....	Ottumwa	4270	Reynolds, A. L.....	Ottumwa
1416	Ennis, W. W.....	Ottumwa	5444	Reed, N. F.....	Ottumwa
2964	Espers, J. P.....	Ottumwa	5479	Robinson, C. W.....	Ottumwa
6615	Ford, L. T.....	Ottumwa	1720	Scott, E. M. B.....	Ottumwa
3911	Graham, H. A.....	Ottumwa	2921	Sampson, S. V.....	Agency
2704	Holtzschuherr, O. Van.....	Ottumwa	3540	Sargent, W. L.....	Ottumwa
5412	Horner, L. C.....	Eddyville	4756	Stephenson, George E.....	Eddyville
5901	Hofman, F. P.....	Ottumwa	5956	Shane, Frank.....	Eldon
6789	Herrick, E. A.....	Ottumwa	6068	Shurts, C. Y.....	Ottumwa
4516	Kaiser, Theodore.....	Ottumwa	1005	Taylor, C. O.....	Ottumwa
4905	Kidd, Fred Z.....	Eddyville	4194	Taylor, H. E.....	Ottumwa
8716	La Force, D. A.....	Ottumwa	994	Udell, A. S.....	Ottumwa
4601	Larson, C. W.....	Ottumwa	2879	Wilson, J. E.....	Ottumwa
8450	Mollison, W. Thede.....	Ottumwa	4517	Walker, G. L.....	Ottumwa
4515	Moore, C. W.....	Ottumwa			

WARREN.

5069	Dowd, I. E.....	Carlisle	4244	Ralston, S. A.....	Lacona
4806	Fellows, E. H.....	Milo	6626	Rice, T. E.....	Norwalk
8420	Husted, D. W.....	Indianola	6212	Stocum, J. W.....	Indianola
6904	Lee, Arthur.....	Indianola	5548	Trimble, Rose E.....	Indianola
6407	Mahanna, F. A.....	Indianola	1595	Wilson, J. H.....	New Virginia
62	Nunnally, L. B.....	Hartford	3882	Waugh, Walter.....	Milo
4069	Osborne, E. A.....	Indianola			

WASHINGTON.

2061	Allen, B. F.....	Kalona	5709	Lemmon, J. E.....	Washington
5008	Bull, A. S.....	Wellman	6613	Longwell, A. F.....	Wellman
1801	Cook, W. A.....	Washington	6903	Lease, N. J.....	Crawfordsville
4383	Carris, E. C.....	Washington	3105	Stewart, J. H.....	Washington
3459	Dosh, C. W.....	Brighton	3353	Stewart, C. W.....	Washington
1308	Glasgow, L. G.....	Washington	4172	Sherman, D. S.....	Washington
3664	Glasgow, J. B.....	Washington	6733	Sherman, Fort.....	Washington
4009	Hochstetler, B. F.....	Kalona	528	Walker, W. A.....	Washington
4973	Holden, J. P.....	Wellman	4447	Wray, A. M.....	Kalona
6187	Harvey, A. S.....	Washington	6207	Waters, W. L.....	Wellman
3968	Israel, Mary.....	Brighton	6250	Winner, M. R.....	Westchester
8298	Longwell, Jessie.....	Wellman			

WAYNE.

6624	Alley, A. J.....	Allerton	2298	King, T. F.....	Lineville
2850	Bruner, D. M.....	Clto	3733	McCulloch, Geo.....	Humeston
5769	Brunner, W. A.....	Lineville	4459	McCoy, John R.....	Seymour
6154	Bonner, S. W.....	Clto	6534	Noble, G. W.....	Promise City
6466	Bateman, W. O.....	Seymour	1873	Rankin, J. B.....	Allerton
1421	Clark, E. K.....	Seymour	6190	Rankin, Roy R.....	Allerton
6900	Dierdorf, Maggie.....	Allerton	524	Sproat, W. S.....	Corydon
5672	Farr, F. E.....	Cambria	5645	Snipley, E. P.....	Corydon
6139	Foltz, E. G.....	Humeston	6483	Shipley, C. J.....	Corydon
1820	Hinkle, G. W.....	Harvard	6545	Vinecent, J. B.....	Lineville

WEBSTER.

6188 Anderson, J. Wm.	Dayton	6508 Kehoe, C. F.	Fort Dodge
4938 Armstrong, E. F.	Fort Dodge	6599 Kershaw, Robt. B.	Fort Dodge
6529 Apland, Thos. A.	Kalo	8354 Larson, T. S.	Fort Dodge
5333 Bailey, G. J.	Lehigh	2865 McNamara, J. F.	Fort Dodge
5832 Burke, F. J.	Gowrie	4074 Maher, W. F.	Fort Dodge
4940 Bowman, C. O.	Gowrie	5243 Miller, D. J.	Fort Dodge
1693 Campbell, W. J.	Fort Dodge	6549 Nerby, O. E.	Burnside
4275 Corey, C. S.	Fort Dodge	1939 Olson, O. M.	Fort Dodge
4526 Dittmer, A. C. H.	Fort Dodge	5308 Olson, O. F.	Badger
5393 Fallon, G. S.	Vincent	5264 Peterson, O. V.	Lehigh
5466 Fisher, Wm.	Duncombe	5681 Pyle, W. M.	Fort Dodge
6036 Franks, C. P.	Kalo	2331 Sackett, R. W.	Fort Dodge
4477 Griffin, H. M.	Fort Dodge	2707 Saunders, O. J.	Clare
5407 Green, O. J.	Fort Dodge	5576 Sherman, J. E.	Fort Dodge
6226 Gillman, G. W.	Fort Dodge	6014 Severin, A. L.	Fort Dodge
8245 Hine, J. B.	Fort Dodge	6779 Skogland, Edward	Dayton
3975 Haire, W. W.	Fort Dodge	5890 Trimbo, J. H.	Harcourt
5980 Haire, Jr. John	Fort Dodge	3675 Vance, J. E.	Gowrie
4278 Hood, E. J.	Claire	2825 Waldburger, J. O.	Fort Dodge
6547 Haggin, L.	Harcourt	5653 Welch, W. R.	Fort Dodge
6043 Iddings, C. W.	Fort Dodge	5230 Williams, H. D.	Barnum
5122 Jones, C. H.	Lehigh	6533 Wise, Chas.	Gowrie
4816 Kehm, Conrad	Fort Dodge	6130 Zimmerman, C. F.	Gowrie
5117 Kunston, G. W.	Callender		

WINNEBAGO.

5330 Alexander, Harry	Thompson	2250 Koto, P. O.	Forest City
5057 Butts, C. M.	Northwood	2595 Keeler, C. E.	Lake Mills
6680 Braley, H. J.	Lake Mills	11 Nerby, L. B.	Lake Mills
1881 Crosby, W. A.	Leland	4683 Nickson, J. D.	Forest City
4038 Cunningham, C. L.	Woden	8299 Pinckney, E. A.	Forest City
5212 Cahill, J. L.	Thompson	4698 Polson, G. E.	Buffalo Center
4107 Fletcher, C. T.	Thompson	5525 Pinckney, Edwin	Forest City
5783 Glaze, A. H.	Buffalo Center	5434 Robinson, C. E.	Forest City
4831 Helgeson, P. A.	Lake Mills	4718 Sorenson, P. R.	Lake Mills
5951 Johnson, Otto	Rake	5814 Stensrud, A. A.	Lake Mills
6123 Jones, H. O.	Buffalo Center	6608 Swain, J. W.	Forest City

WINNESHIEK.

5253 Allen, R. E.	Ridgeway	1011 Mills, C. J.	Ossian
8128 Blanchaine, C. H.	Ossian	8949 Miller, F. T.	Fort Atkinson
8128 Bayless, Chas. D.	Ossian	6601 Mills, E. C.	Ossian
4510 Brunt, I. W.	Decorah	4508 Parman, E. J.	Calmar
5932 Brunt, J. M.	Decorah	6053 Peterson, P. A.	Calmar
6432 Burns, Wm. J.	Fort Atkinson	1531 Riggs, W. K.	Castalia
2984 Engbartson, Richard	Decorah	5078 Sorenson, A. J.	Decorah
6276 Groves, J. A.	Decorah	682 Worth, Fordyce	Hesper
5189 Horton, C. D.	Fort Atkinson	5702 Wemark, J. L.	Ridgeway

WOODBURY.

4710 Anderson, C. E.	Moville	3832 Haefner, E. C.	Sioux City
4997 Andreen, Carl	Sioux City	4752 Hoy, A. W.	Sioux City
2703 Beppler, J. F.	Sioux City	5017 Horton, F. E.	Sioux City
4052 Brooks, H. A.	Oto	5190 Harstad, Oliver	Sioux City
5351 Baker, E. S.	Sioux City	6015 Hart, B.	Danbury
5607 Burton, John R.	Sioux City	5996 Iverson, W. P.	Sargeant's Bluff
5994 Brown, F. V.	Sioux City	3144 Knos, L. P.	Sioux City
6728 Baker, W. J.	Sioux City	3855 Klise, J. F.	Sioux City
2990 Crady, E. E.	Sioux City	4961 Kloster, B. J.	Sioux City
8549 Cummings, I. P.	Sioux City	5059 Klise, W. J.	Sioux City
4832 Crain, W. L.	Cushing	1836 Loucks, R. H.	Danbury
4918 Countermine, R. H.	Salix	5459 Lander, W. R.	Sioux City
6755 Corbett, J. H.	Sioux City	4835 Lundgren, C. W.	Sioux City
6916 Cannon, H. D.	Sioux City	5292 Lerch, Fred, Jr.	Sioux City
6942 Crumrine, J. W.	Sioux City	6237 Loucks, Grace	Danbury
3642 Dewey, W. H.	Moville	6603 Loucks, R. C.	Danbury
6752 Devine, T. H.	Danbury	2569 Montross, G. D.	Sloan
6303 Davison, J. A.	Hornick	2680 Marotz, F. W.	Sargeant's Bluff
3553 Eich, J. F.	Salix	2993 Moore, S. H.	Sioux City
6755 Ebrecht, G. M. O.	Sioux City	2994 Moore, A. J.	Sioux City
5427 Evans, F. D.	Sargeant's Bluff	3382 Mowrer, J. R.	Sioux City
5426 Franz, F. W.	Sioux City	5313 Malone, Edmund	Sioux City
8449 Guiney, H. P.	Sioux City	6953 Mullan, G. D.	Sioux City
5790 Green, Arno	Salix	4321 Nichols, C. E.	Sioux City
6712 Goodall, J. A.	Sioux City	5086 Nichols, F. F.	Pierson
774 Hope, G. T.	Sioux City	4878 O'Day, J. W.	Danbury
1185 Hansen, F.	Sioux City	5438 O'Day, J. J.	Danbury

WOODBURY—Continued.

5728 Oertel, F. H.	Bronson	6493 Stager, A. F.	Sioux City
5729 Huff, Oscar	Sioux City	3439 Thompson, E. T.	Sioux City
1119 Rice, Charles	Smithland	3447 Taylor, J. F.	Salix
5744 Ransdler, V. D.	Anthony	3446 Thelander, C. C.	Sioux City
2142 Roth, L. S.	Smithland	3724 Teffy, Daniel	Anthony
5842 Scherling, Gustav	Sioux City	4799 Thompson, Joseph	Sioux City
5232 Schmidt, W. F.	Sioux City	6784 Thompson, L. S.	Sioux City
5894 Sedwick, W. L.	Sioux City	1624 Weeks, A. J.	Correctionville
4158 Samuelson, J. A.	Sioux City	2244 Wright, W. M.	Correctionville
4744 Smith, F. N.	Sioux City	3651 Wesser, L. E.	Sioux City
4796 Soper, G. M.	Sioux City	4499 Wendell, Ed.	Smithfield
4619 Sprague, Carl	Sioux City	5535 Wohlgenuth, J. G.	Sioux City
5199 Southwick, M. E.	Morville	2995 Yockey, C. C.	Correctionville

WORTH.

5294 Brown, L. O.	Northwood	1936 Jones, J. B.	Fertile
4992 Coad, J. A.	Hanlontown	6927 Johnson, F. W.	Northwood
5101 Dillon, G. W.	Northwood	5334 Mann, S. M.	Grafton
5675 Dillon, L. F.	Manley	6490 Oien, T. O.	Hanlontown
2259 Emery, G. M.	Northwood	5136 Phillips, Mrs. N. W.	Fertile
4545 Flaherty, J. F.	Joice	4953 Sanders, C. W.	Manley
5184 Gray, H. E.	Kensett	2518 Thorson, Nels	Northwood
4419 Hansen, A. W.	Hanlontown	6839 Thurston, Henry	Northwood
6411 Hurd, J. W.	Kensett		

WRIGHT.

5597 Bayles, M. M.	Holmes	3070 Morse, C. H.	Eagle Grove
5546 Barr, H. J.	Clarion	2202 Mulnix, J. A.	Dows
5567 Brown, J. C.	Belmond	3441 Mulnix, A. B.	Dows
5629 Bauman, Lena	Belmond	5981 Melzner, A. E.	Eagle Grove
6754 Drill, T. G.	Eagle Grove	5507 McCurnin, A. A.	Belmond
5646 Daubenberger, H. A.	Eagle Grove	6527 McCurnin, F. L.	Belmond
2350 Ellis, G. F.	Belmond	6270 Morgan, J. H.	Clarion
4732 Edwards, J. E.	Eagle Grove	2492 Newman, E. P.	Dows
2646 Frank, E. S.	Clarion	2582 Parker, L. T.	Eagle Grove
5093 Farran, J. S.	Rowan	5217 Prann, W. E.	Goldfield
5182 Finn, G. W.	Galt	2201 Smallpage, R. H.	Eagle Grove
5448 Gregory, C. W.	Goldfield	3901 Smith, A. C.	Eagle Grove
3141 Harr, D. D.	Belmond	3765 Smallpage, J. B.	Eagle Grove
4494 Hamilton, L. O.	Clarion	4238 Smith, J. C.	Woolstock
4618 Hills, F. N.	Clarion	5000 Sorenson, Hans.	Eagle Grove
5411 Hansenway, J. R.	Dows	6196 Smith, A.	Eagle Grove
5951 Hartsock, L. M.	Clarion	6740 Souders, L. M.	Woolstock
6016 Hillestad, K. E.	Clarion	6855 Schulte, J. E.	Dows
6247 Johnston, Jay	Clarion	6893 Stickle, J. C.	Woolstock
4678 Johnston, Chas.	Eagle Grove	5024 Wood, H. L.	Eagle Grove
3824 Keneflek, T. H.	Belmond	6381 Wallace, T. J.	Woolstock
5792 Klingaman, O. B.	Dows	6824 Watson, W. S.	Dows



PAUL O. KOTO

Fourth Biennial Report

OF THE

Veterinary Surgeon

OF THE

State of Iowa

TO THE

Governor of Iowa

FOR THE

Period Ending June 30, 1903.

DES MOINES:
BERNARD MURPHY, STATE PRINTER,
1904.



LETTER OF TRANSMITTAL

To His Excellency, Hon. A. B. CUMMINS, Governor of Iowa:

In compliance with the provisions of the statute, I have the honor to present this, the fourth biennial report of the State Veterinary Surgeon of Iowa, for the term ending June 30, 1903.

Respectfully,

PAUL O. KOTO.

REPORT.

I have the honor to present this, the fourth biennial report of the State Veterinary Surgeon of Iowa, containing a statement of the expenses of this department during the period ending June 30, 1903.

Under the appointment and commission of your Excellency, I assumed the duties of this office April 28, 1902, hence this report covers a period of nine months during which this department was under the administration of my able and efficient predecessor, Dr. J. I. Gibson, to whom I am under obligation for many courtesies and much valuable information at the beginning of my official term.

I appreciate the many courtesies the members of your office have shown me, materially assisting me to carry on the work of this office more conveniently and also am greatly indebted to Dr. D. E. Salmon for valuable assistance rendered. The State Chemist, State Bacteriologist and Secretary of the State Board of Health have greatly aided me and I am also under obligation to my assistants and the members of the profession for their hearty co-operation and able service rendered. I fully appreciate the fact that the press has great influence on the public mind and often assists us materially. The public fully understands that up-to-date veterinarians are of great benefit to human life as sanitarians, preventing the spread of contagious diseases from animal to man.

One difficulty this department has to contend with is the matter of correspondence and keeping of the records. The work of this department has increased so much within recent years that this has been carried on properly only by the aid of clerical help. The last season has been one that might reasonably have been expected to cause an unusual amount of disease among the live stock of this State. The excessive rains during this period

and early frost left the grass and vegetation in an unripened condition which certainly favored such conclusion. But it is gratifying to know that the condition of live stock has at no time caused general alarm or great financial loss only in a few instances.

In reporting the work done for this period, we have grouped the same under the heads of various diseases so as to summarize the active work of this department in as concise a manner as possible.

DISEASES ENCOUNTERED.

During the period mentioned in this report our department has received approximately one hundred and seventy official calls, including the calls from the Bureau of Animal Industry, and upon investigation have found the following diseases: Actinomycosis, Abortion, Black Leg, Catarrhal Pneumonia, Encephalitis, Ergotism, Glanders, Gastro Enteritis Infective, Hog Cholera, Influenza, Mange, Verminous Bronchitis, Purpura Hæmorrhagica, Pneumonia Lobular, Rabies, Suppurative Lymphingitis, Specific Ophthalmia, Scabies in cattle and sheep, Thrush in cattle and Trichinosis, and Tuberculosis.

Of the above diseases Glanders and Farcy predominated and were found to exist in the following counties: Adair, Black Hawk, Butler, Cass, Chickasaw, Crawford, Dickinson, Fremont, Grundy, Iowa, Linn, Mills, Page, Polk, Plymouth, Pottawattamie, Pocahontas, Sioux, Tama, Washington, Webster, Worth, Woodbury. In nearly all instances the owners would voluntarily consent to destroy the animals diseased. Occasionally they would manifest some degree of dissatisfaction when informed that they would receive no reimbursement from the State, but when appealed to their best judgment, would admit an animal diseased with glanders was of no value, and could readily see the State should not be held responsible for his misfortune and pay for something of no value.

Those unaccustomed to this insidious disease do not realize the danger of contagion of a mild case, and are oftentimes inclined to doubt the transmissibility of the disease. It has, however, been demonstrated that an animal suffering from the disease in a seemingly mild form can convey it to a healthy animal and often outlive the animal thus inoculated.

The period of incubation varies according to conditions and the constitution of the patient. In some instances it may prove

fatal in a short time and in others it may assume itself into a chronic form and the animal live for years, continuing to spread this terrible and fatal disease to animal and man. For the benefit of those not familiar, we produce two cuts, both typical cases. Cut No. 1 shows two horses well advanced in the disease. These horses with two others were destroyed in the Great Western stock yards at Fort Dodge while in transit during the month of May, 1902. The history of the case is unreliable, but from the information obtained the animals hailed from the Wisconsin pineries. The owner claimed he had worked them a short time on a railroad grade before shipping to Fort Dodge. This will tend to show that a great many cases are imported into our State by that class of people moving from place to place and scattering the seed of infection wherever they go.

Cut No. 2 represents an animal owned by a well-to-do farmer in Worth county. During the month of March, 1903, I received a call to investigate a supposed case of glanders and upon my arrival found a typical case in a bay gelding about six years old. The animal was in a deplorable condition, greatly emaciated, with ulcers and pustules over the different parts of the body, varying in size from a hazelnut to that of a walnut, with a thick flow of pus from these ulcers as well as the nasal cavities. The owner readily consented to destroy the animal and disinfect the premises. It being too late in the day this was postponed until the following morning. I predicted we might be spared the task of destroying the animal and we were gratified the next morning to find that our patient had ceased to breathe. The animal had previously been isolated and kept in a cheap barn away from the other buildings and the owner preferred to burn the shed and all, realizing it was practically impossible to disinfect the dilapidated old building and so this was done. This animal had previous to the time of isolation been in the same yards and barns with the other horses on the premises. Three other animals which showed slight symptoms were isolated and placed in quarantine and the premises thoroughly disinfected. I visited the place in thirty days and found the disease had advanced to a considerable extent, so promised to call again some time later, but before the time was up the owner became convinced that it was useless to continue this source of danger to the balance of the animals and promptly destroyed the three animals diseased and cleaned up the prem-

ises. Since then no further evidence of the disease has manifested itself. Upon further inquiry into the history of the case I learned that a neighbor had lost a horse with similar symptoms some eight or ten months previous. The first symptoms of the disease were not considered of much consequence but it developed so rapidly that death resulted in a short time and upon the advice of a veterinarian the premises were disinfected and whitewashed, thus preventing any further spread of the disease among his own horses. The pre-existing cause was no doubt due to the fact that a railroad grade had recently been constructed in that vicinity, which demonstrates the necessity of keeping a distance and watching the condition of animals employed in construction of railroads and other work where numbers of horses and mules are kept in close proximity.

The following excellent paper compiled by Dr. Hal C. Simpson, Assistant State Veterinary Surgeon of Denison, Iowa, will certainly be highly instructive both from a theoretical and practical standpoint. The doctor had a thrilling experience in the handling and transporting of American horses to South Africa during the English-Boer war, he having been in charge of several cargoes of horses to that country, where outbreaks of glanders were quite frequent, and rigid measures were adopted to stamp out the disease.

GLANDERS.

Glanders is one of the oldest diseases affecting horses, mules and asses of which we have any history. It was mentioned by Aristotle in his early writings. The earliest notice of this disease in which glanders and farcy are regarded as essentially one disease is probably that by Apsyrtus, a veterinary officer in the army of Constantine the Great, in the fourth century. This also shows that the ancients appreciated the value of an army veterinarian. In early writings it was called malleus, humidus, farciminosus, and described under several forms. Its contagiousness was recognized by a Greek veterinarian, Veyetius Renatus. About the same time he recognized the contagious properties of the discharges and recommended that sick animals should be separated from the healthy. In the middle ages German law considered it a disease setting aside a sale. In early times it was considered as identical with tuberculosis, diphtheria and pyaemia. Its contagiousness was known positively from about the seventeenth century, and in the veterinary writings of that time the following remarks have been found: "Its transmission was brought about by the air." "It is identical with syphilis of man." "Directions for the disinfection of stables: Advisability of slaughtering all glandered horses and isolation of suspected animals."

Toward the end of the seventeenth century and the beginning of the eighteenth century numerous experiments in Germany, France and England



No. 1.—GLANDERS—Above horses were destroyed as described in this report.

demonstrated the transmissibility of glanders, also its inoculability. The discharges were particularly virulent, while the blood did not give as positive results. In 1837 Rayer recognized the transmissibility of glanders as a distinct disease to man. About the middle of the last century it was thought that strangles underwent a change within the animal and became glanders.

The bacteriological researches upon glanders began about 1868. A fungus was found which was considered as identical with that found in syphilitic lesions in man. Christut and Kiener first identified the true bacillus of glanders, and in 1882 it was cultivated in liquid mediums, and the fifth and eleventh cultures produced glanders in guinea pigs and donkeys.

The bacillus is cultivated in the coagulated serum of the horse or sheep or neutralized broth of the horse, ox or chicken and upon potatoes. Warm weather favors its growth. Temperatures below 65 F., 20 C. or higher than 113 F. 45 C. hinders its development or destroys it. It resists putrefaction from fourteen to twenty-four days, and in water it remains virulent from fifteen to twenty days. In moist matter it does not live longer than four months, and this is believed to be the maximum duration or virulence of the infectious matter.

The statement of the reappearance of glanders by the action of virulent matters which have been preserved in stables from which the disease has disappeared for several years is erroneous. It is indeed almost certain that the disease is only kept latent in animals where it passes unobserved for a long time. In a stable where it existed for three years an old horse was ordered killed which showed but a slight mucous discharge and no enlarged glands. This was done only because his neighbors in the stable became afflicted with glanders. At the autopsy the lungs were filled with nodules, some of which were of long standing. Since then no other cases of glanders have developed.

Glanders is found frequently in the most insidious forms, and we recognize that it can exist without being apparent, that is it may affect a horse for a long period without showing any symptoms that will allow even the most experienced veterinarian to make a diagnosis. An old gray mare belonging to a tavern keeper was preserved for family use with good care and light work for a period of eight years, during which time other horses in the tavern stable were from time to time affected with glanders without any apparent cause. The mare, whose only trouble was an apparent attack of heaves, was sold to a huckster who placed her hard at work. Want of feed, overwork and exposure rapidly developed a case of acute glanders, from which the animal died, and on autopsy were found the lesions of acute pneumonic or glanders grafted on chronic lesions, consisting of old tubercles, which had undoubtedly existed for years.

In a recent case a horse was examined for soundness and passed as sound. A few months later the horse was treated for skin eruption from which it recovered. A year after it was out of condition, hidebound, with a slight cough and a slight eruption of the skin, which was attributed to clipping and the rubbing of the harness, but which had nothing suspicious in its character. The horse was placed on tonics and put on regular light driving. In six weeks it developed bronchitis without having been especially exposed, and in two days this trouble was followed by lobular pneumonia and the breaking of an abscess in the right lung. Farcy buds developed on the surface of the body and the animal died. The autopsy showed

the existence of a number of old tubercles in the lungs which must have existed previous to the purchase more than a year before.

Amongst the carriers of infection may be named public watering troughs, feed stables, feed yards, mangers, railway cars, stockyards, harnesses, curry combs, brushes, water buckets, sponges, or clothing of grooms. It is not believed that glanders is contagious that is breathed in. Experiments of making a healthy horse breathe the expired air of a known glandered horse through a tube for several hours have not resulted in an infection. This can be accounted for by the fact that in the well horses the nasal mucous membrane had not even a scratch on it and they were not breathing hard enough to carry the bacilli deep into the lungs. In nearly all cases it is the mate or the horse in the next stall, where the horses are changed from stall to stall, or a healthy horse is put to work to the same wagon or farm implement and the healthy horse licks the tongue or neck-yoke, or else the healthy horse licks the nose of the one discharging, and accidentally carries the infection to his mouth on which there is a slight abrasion, and the glander bacilli lodges there and is taken up by the blood and carried to the parts most favorable for its development. Even if the discharge has not the characteristic discharge of glanders it can, and very often does carry the glander bacilli, even when the discharge is only apparently mucus.

INFECTION.

In a great many cases the bacilli penetrate through the respiratory organs; when in suspension in the air they reach first the nasal mucus membrane. Their introduction into the depth of the respiratory apparatus is favored by certain circumstances: when, for instance, the animals sniff at one another when the respiration is accelerated and deep, after the influence of unusual exertions. They may be carried directly into the lungs with the inspired air, and there produce broncho-pneumonic centers. Pulmonary glands may be primary just as well as nasal glands. In a large number of cases the lungs alone are affected, or it is upon them we may observe the oldest lesions.

The skin constitutes another mode of entrance for the pathogenic element. Cutaneous glanders, considered formerly as a peculiar form of the disease, is called farcy. Primary glanderous disease of the skin is only produced through wounds; farcy is thus generally secondary, caused by emboli at the time of general infection. It is very rare for the bacillus of glanders to traverse the digestive mucus membrane in horses, mules, or asses, but carnivorous animals, especially in zoological gardens, animal shows and circuses, frequently develop the disease from having eaten parts of diseased horses. The generalization of the glanderous process takes place regularly through the lymphatic system and by the circulation the bacilli are carried into all the organs.

INCUBATION.

Like all specific infectious diseases, glanders has a period of incubation, but in glanders this period is extremely variable. When resulting from direct inoculation it is usually only a few days, and animals thus treated have been known to show symptoms in thirty hours. When following the normal mode of propagation, that of infection, mediate or immediate, it is some-

what longer ere the diagnostic symptoms are developed. In these cases an interval of several weeks, and even months, is said occasionally to elapse between the reception of the morbid agent and the appearance of characteristic symptoms. During this latent period of the disease certain conditions, if brought to bear on the animal so circumstanced, seem to have a power of hastening the development of diagnostic symptoms. Long continued or rapidly performed work, and other adverse conditions, such as placing the animals in unhealthy stables, exposure to cold or dampness, have all been noted for operating in this manner.

Mules and asses seem to be more susceptible to glanders than horses, and the disease develops much more rapidly in them after infection takes place.

It may be said that glanders exists in two forms, chronic and acute, and these two forms vary a great deal in intensity.

CHRONIC GLANDERS.

Symptoms. In a great many cases the disease presents itself in such a mild form that the general health is scarcely affected. At the first there will be a discharge from one or both nostrils, generally only one and usually the left, the quantity of which is variable and may entirely disappear at times. This discharge resembles that of chronic catarrh, that is, of a mucus consistency looking somewhat like glue. Soon this discharge begins to change its aspect and becomes yellowish gray or yellowish green. Quite frequently it shows a reddish tinge due to rupture of small blood veins or even enlarged capillaries. Gradually it becomes thicker, viscid and mingled with purulent matter, rather green in color and inclined to adhere around the margin of the nostril, where it dries and accumulates, causing the nasal opening of the affected side to appear smaller or more contracted than in health. Or else it is expelled from the nostrils by sneezing in large or small pasty masses. With such a discharge as just described a careful examination will in all probability find on the mucus membrane of the nostrils small nodules or tubercles, which are sometimes perceptible to touch, although for fear of infection it is not advisable to explore too far or too much. These as a rule do not last long but are followed by chancres or ulcers more or less deep with denuded, thickened edges and a lardaceous bottom which may become cicatrized, leaving after them fibrous islands of variable form.

The swelling of the lymphatic glands in the intermaxillary space is another important symptom. In the beginning the gland is diffuse, slightly doughy and sensitive. This swelling is of a remitting nature, often varying in size in a short period. It is bossilated on its surface and adherent to the base of the tongue or to the lower jaw bone. In some subjects it is adherent to the skin. When the discharge is unilateral the swelled glands are on the same side, usually the left.

The swelling whether of one or both glands is more marked as increasing the bulk of the gland antero posteriorly than across the space. General nutrition suffers in proportion as the affection progresses. It becomes more and more imperfect and the animal becomes poor and is easily tired out. Sometimes violent exertions are followed by bleeding from the nostrils, more or less severe. Frequently there is irregular febrile reaction rarely exceeding 103° F. which may be remittent or intermittent, and intensity of which

is proportioned to the number of ulcerations and the extent of the catarrhal discharges. Sometimes there is a discharge of light colored urine. This was formerly regarded as a prominent symptom.

The hair becomes dull, dry and bristly, adhering to the skin and frequently when of a long standing case, a remarkable friability of the bones, which is notably marked by numerous fractures of the ribs. The animal has a chronic cough and sometimes symptoms of asthma. When the disease is of long standing there is often swelling of the legs, underside of the body and in the entire horse and swelling of the testicles. The above described symptoms are of chronic glanders of the horse. It is yet certain that many cases occur where some of these, it not all, are absent, and yet we know from many sources that such are undoubtedly deeply affected with the specific poison and capable of infecting other horses. The duration of chronic glanders is very lengthy. It may reach seven years.

ACUTE GLANDERS.

Symptoms: Acute glanders is rare in the horse, about 10 per cent. It is on the contrary the ordinary form in the donkey, mule, jenny or ass. Sometimes it appears from the onset, in other instances it follows the chronic form when this becomes generalized by other affections. It presents the characteristic of a septic infectious disease with rapid evolution, producing an ulcerous destruction of the respiratory mucous membrane and abscesses in the skin, lungs and other organs.

The disease begins with chills, rigors and the pulse is increased in frequency, quick, soft and of little volume. The respirations become frequent and the temperature rapidly rises and remains high, even 107° F. or 42° C. We observe muco-purulent, bloody nasal discharges. The nasal mucus membrane is overrun with nodules and chancres which rapidly become confluent and undergo a true purulent destruction. These nodules or tubercles vary a great deal in size. They are rendered very visible by having a yellowish white center. This center is surrounded by a grayish zone, which again is encircled by a red zone. In a few days after their first appearance these nodules soften and break. This results in this production of the characteristic chancreous sore or ulcer, which is marked by irregular excavated edges and bottom, which are inclined to become covered with vascular granulations. These ulcers are not disposed to heal, and by the removal of the sound tissue between several small sores, one large rodent ulcer is produced.

These alterations in the nasal mucous membrane may be developed in a very short time, two or three days. The throat becomes swollen, which results in laborious, rattling, wheezing and moaning respiration, which is obstructed by the discharge drying around the swollen nostril. The flanks heave and the appearance is often that of a horse suffering from pneumonia, and the inability to swallow food, from which rapid emaciation follows. The head and particularly the nose and mouth become swollen, the eyes are weak and discharge almost constantly. These symptoms are often added to those of farcy which is not necessarily confined to the head, but more often extends to the legs and other parts of the body on which in the course of the swollen lymphatics, nodules develop themselves, which after a while soften, break and discharge their purulent matter. We find also an abund-



No. 2.—GLANDERS—Death resulted as described in this report.

ant diarrhea and the urine is often increased in quantity and contains a great deal of albumen. In general, acute glanders has a sharp course. Its usual termination is death, which ordinarily takes place in from three to twenty days.

Farcy is more rare in the chronic than in the acute form of this infection. Its favorite regions are the head, extremities, shoulders, chest and abdomen, parts where the skin is thinnest and the lymphatics nearer the surface.

The pimples and tumors which are developed in the skin in the subcutaneous connective tissue vary in size from a pea to a walnut, which often become transformed into crateriform chancres. This ulcer is irregular in shape with ragged edges which overhang the sore. It has a grayish dirty bottom, which secretes a yellowish viscid liquid of a bad aspect, like the white of an egg in consistency, and like olive oil in appearance. This discharge is almost diagnostic, sometimes having a bloody tinge, which generally dries soon and forms a brownish yellow crust or scab on the surface of the ulcer. The excess of the discharge may drop on the hairs below and form similar brownish yellow crusts. These ulcers are generally found in groups and away from the articulations. These lymphatic gland alterations often induce severe lameness which persists for some time.

Next the lymphatic vessels in the parts affected become swollen and hardened and appear like great ridges underneath the skin. They are hot to the touch and sensitive. The cords may remain for a considerable time and then gradually disappear, or they may ulcerate like farcy buds, forming elongated, triangular, serpentine ulcers with a characteristic dirty gray bottom and ragged edges, and pour out a viscous oily discharge like the chancres themselves. Chronic farcy in the ass or mule is very rare but does occur.

Treatment. Spontaneous healing of glanders is possible like that of tuberculosis, but is very rare. The cases of healing with medical agents are generally based upon errors in diagnosis. It is best, considering the risks incurred, never to attempt the treatment of any glandered animal.

SANITARY MEASURES NECESSARY FOR THE PREVENTION AND ERADICATION OF GLANDERS.

When glanders appears in a stable of horses, in addition to the removal of all affected animals, it is most essential to attend carefully to the ventilation of the stables and fitting and the removal and burning of contaminated woodwork and the whitewashing of the entire stable, the whitewash to contain six ounces of carbolic acid to every bucketful of whitewash, or corrosive sublimate, four drams. The hay in the manger and the bedding should be burned, and the harness, brushes, combs, blankets and in fact everything which might carry infection, should have boiling water poured over them freely, or if not of much value they should be burned. Pure air and sunlight are valuable disinfectants and should be admitted freely. Immediately following this mechanical cleansing, fumigation with sulphurous acid evolved from burning sulphur is to be recommended from its thorough penetrating and diffusive character. To be successfully done the stable must be tolerably close, so as to prevent the egress of the vapor, which is readily formed from burning sulphur in separate iron or earthenware vessels distributed throughout the building. The doors ought to be kept closed until

the vapor has been well distributed and had a sufficiently long contact with the walls. About two ounces of sulphur for every hundred cubic feet of air space will be sufficient, and the gas permitted to remain in contact with the walls for twelve hours.

Chlorine gas generated from treating black oxide of manganese with hydrochloric acid is also an efficient disinfectant of the gaseous form. And see that in all processes of disinfection thoroughness and certainty in the destruction of the virus or infecting agent are most surely obtained by varying the disinfecting agents employed rather than by employing an extra amount of any one.

H. C. SIMPSON.

INFECTIOUS OR CONTAGIOUS ABORTION.

This is a disease that has caused considerable anxiety and expense among breeders and stock owners in more ways than one. It is a contagion that is far more serious and causes more pecuniary loss than some of the diseases which are dealt with by prompt and radical measures.

Abortion among cattle until recently was not considered contagious but our best authorities do not now disagree on that point, but the perplexing question arises how to prevent the spread of this disease. Many innocent purchasers have bought one or more infected animals spreading the disease among the entire herd before being aware of its existence causing great loss in many instances. Quite frequently the previous owner would disclaim any knowledge of the disease having existed among his herd and this positive denial would be as strong in proportion as he thought his business might be injured were the facts to become known. The following article compiled by Dr. Anton Kaderabek may be helpful to those who will give it a careful perusal.

CONTAGIOUS ABORTION IN CATTLE.

Abortion is the premature expulsion of the product of conception before it is viable out of the womb. There are different causes that produce abortion, but I shall confine myself to the contagious abortion. The cause of this can be usually ascertained by carefully inquiring into the history of the outbreak. When a herd has been continually healthy up to the date of the introduction of a cow brought from a herd where abortion has been prevailing and when following her arrival one after another of the original herd abort without any apparent cause in the way of change of feed, water, barns, stalls or general management, the evidence of the introduction of

contagion by the cow in question is very circumstantial and forcible. If pregnant cows standing next to the new cow abort, the argument for contagion is still further corroborated. If the trouble continues in the herd year after year, attacking fresh animals some months after their purchase, the case becomes still stronger. Or if a cow from a healthy herd is sent to a bull that has been allowed to serve an aborting cow, or to buy a bull from a herd where abortion has taken place and the cows of the previously sound herd begin to abort, these occurrences are manifestly the result of contagion. A newly purchased cow aborts and is disposed of in consequence and another cow is placed in the same stall and in due time aborts also, and others follow in succession, especially those that stood next to or near the stall in question, points to an introduced infection. An indefinite number of other cases might be recalled, each varying from the last, but all agreeing in this, that the evidence of infection stand out prominently and unmistakably. The infecting material may have been carried by the tail, tongue, soiled stalls, gutter, rubbing against a post, fence or other object, yet the fact of contagion can be demonstrated with reasonable certainty. These conclusions have been repeatedly affirmed by actual experimental transmission.

Galtier found that when the infecting vaginal mucus of the aborting cow was transferred to the same passage of a healthy pregnant one, abortion took place in the latter. He succeeded in conveying the disease in this way from the cow to the sow, ewe, goat and rabbit and found that the growth in the body of the rodent intensified its virulence, so that it could then be successfully inoculated on the mare, bitch and cat.

Bang subjected two cows from healthy herds and three months pregnant to repeated injections of the products of the culture of his abortion bacillus in serum glycerine bouillon. Three injections were made April 14th, May 23d and June 14th and on June 24th one cow aborted. The other sickened and when killed was found to carry a dead fetus. Pure cultures of the abortion bacillus were found in the foetal membranes and liquids of both animals.

Tobiassen quotes the case of a cow from an aborting herd, which calved a fortnight before the regular time. The calf was at once sent to another farm where no abortion had occurred and placed in the same building with the pregnant cows, all of which later aborted. The outbreak thus started lasted for several years.

J. R. Jansen reports that a cow brought from an infected herd for fattening purposes, proved to be pregnant and finally aborted and that twenty-four of the pregnant cows on the same farm aborted the same year.

Franck attributed the disease to *Leptothrix Vaginalis*, but subsequent observations failed to substantiate this. The Scottish Abortion Commission isolated five different bacteria from the abortion membranes, but failed to identify any one of these, as by itself capable of causing the disease. Nocard found in the fibrino-purulent matter between the chorion and womb, in aborting animals, a micrococcus occurring singly or in chains and a short, delicate bacillus isolated or in pairs. The cow as a rule acquires immunity after one or two abortions caused by the microbe with which we are at present most familiar. There are exceptions to this rule, due to special nervousness and excitability of given cows, which tend to an indefinite repeti-

tion of the abortion under the stimulation of pregnancy, of the continued presence of the microbe, or of some local disease of the ovary, womb or peritoneum. Yet statistics show that this only applies to a small portion of cows, and these the most nervous.

The difficulty of reaching a conclusion on this point depends on the fact that stock owners very commonly dispose of aborting cows, and as the newly exposed cows are usually attacked sooner or later, it is too confidently assumed that the old cows also would have continued to abort had they been retained. Many years ago, however, observant New York dairy-men had noticed that the same cow rarely aborted over three years in succession, and in the great majority of cases not over two. Another owner of a large herd said as a rule with him a cow did not abort a second time. The cow that no longer aborts is not, therefore, a safe member of a herd. As an individual animal she has become resistant to the pathogenic influences of the germ, she is immune to it to the extent that she no longer aborts, but her system and generative passages have acquired no such active bactericidal power over the microbe as to lead to its speedy destruction. The genital passages once colonized continue to be a field of growth of the bacillus long after its power to cause abortion in that particular animal. In short it is the rule that the immunized animal can with safety to itself carry a germ that readily infects its non-immunized fellows. In one case of infectious abortion this is one of the most dangerous elements, as the apparently healthy recovered cow receives no attention in the way of separation and disinfection, but is allowed to spread the infection through the bull in common with other cows and by being transferred into new and healthy herds.

Symptoms. Contagious abortion sometimes takes the form of sterility, the animal failing to conceive. If conception takes place, the abortion usually takes place after the foetus has attained a considerable development, in cows from the third to the seventh month.

Oftentimes the premonitory symptoms are entirely unobserved. Usually there may be detected some heat and enlargement of the mammæ with a decrease in the milk yielded. Still more striking is a muco-purulent discharge from the vulva, opaque, white or yellow, while that which appears in oestrus is perfectly clear, transparent mucus. The discharge may be densely white or reddish and may be accompanied by some swelling of the vulva and redness of its mucosa, which is dull, rough and granular or even the seat of a papillary eruption. The membranes are often retained and become very offensive. In other cases a muco-purulent discharge persists for a length of time, insuring sterility so long as it lasts and causing ill health and emaciation.

Therapeutics are useless in contagious abortion as the disease usually runs its course before any danger is suspected. If premonitory symptoms are observed, the abortion may sometimes be warded off by putting the animal in a quiet place and seeking to obviate labor pains by opiates and ounce doses of *viburnum perunifolium*.

The treatment is prevention and protection.

First. The protection of a sound herd against the infection.

Second. The extinction of infection in a herd already diseased.

This requires the greatest possible care because the infected animal usually presents the appearance of perfect health and there is no ready means

of testing the presence or absence of the bacillus. In purchasing a cow in a public market, the new owner may find her affected with the bacillus and a serious danger to his whole herd. To protect the latter he must learn that the herd from which she came has had no abortion for several years before and that the offspring for the different years are present in numbers corresponding to the dams. In the absence of this a certificate and guarantee against infection of other animals by the one purchased may be well demanded of the seller. A certificate from the veterinarians attending the herd furnishing the animal may also be sought in evidence of the absence of abortion from the locality. Imported animals should be safely guarded in the same way but even greater care lest the microbian sources of new types of abortion should be brought into the country. A guarantee of this kind might well be demanded by the Federal government in the case of all the breeding animals imported. In case of failure to secure the most perfect guarantee with the purchased animal, it would be worth the purchaser's while to separate it from his valuable herd until it has been proven to be entirely free from infection. If bought for a sire it should be subjected to a course of disinfection, and if for a dam and unimpregnated, antiseptic irrigations be made daily for a week and the external part, hip and tail be daily washed with antiseptics. If the newly acquired animal is pregnant keep her by herself until parturition and even if this takes place at the full term, irrigate the womb daily for a week with a disinfectant, delay having her served for a month and subject the sire of the herd to thorough disinfection. It may be that she still carries the germ but has become tolerant of it.

EXTINCTION OF CONTAGIOUS ABORTION.

In the first place we must have two separate stables, one for the healthy and one for those known to be affected and the suspicious ones. The cow that shows symptoms of abortion or that has aborted, should at once be removed to the quarantine stable and her stall, gutter and drain leading from it should be thoroughly disinfected and the whole stable whitewashed. The aborted foetus and membrane should be burned at once or boiled and then buried. The manure and bedding should also be burned. The manure from the quarantined stable should be put on one pile in a separate lot so that the stock cannot get to it. Saturate it with a 6 to 100 solution of sulphate of copper. All the cattle in both stables should have the external generative organs, the hips and the whole length of the tail washed once or twice a day with an antiseptic solution of carbolic acid or creolin 2 or 3 to 100. It is a good practice to keep a separate sire for the aborting and quarantined animals. All cows in an aborting herd or from one where aborting animals have been removed within a year, should after delivery, be treated with an antiseptic for one week as previously recommended. This will guard against the danger from animals that carry the germ, but have become so tolerant of it that they themselves no longer abort. New born animals brought in from other herds should be sponged all over with some disinfectant before being added to the herd. In case of breeding animals going to pasture, separate fields should be furnished, one for the healthy and one for the aborting ones. Breeding ewes, goats and sows should be excluded from all pastures occupied by suspected herds or those under treatment. It is important to reserve the herd sire for the exclusive use of the home herd.

ANTON KADERABEK.

RABIES.

During this period there has been an unusual number of outbreaks of this disease, having investigated no less than seventeen official calls and the majority of cases were in the spring and summer of 1902. This disease has decreased about 50 per cent during the last season. From information obtained an estimate of one hundred head of cattle died or lost their lives from this disease, besides the loss that was not reported to this department.

The similar diagnostic symptoms found in other diseases often gives an opportunity for doubting rabies sometimes, therefore it becomes necessary to obtain a true history of the outbreak and a thorough examination of the premises and surroundings before rendering a definite opinion.

The disease was found to exist in the following counties: Calhoun, Crawford, Davis, Floyd, Franklin, Greene, Hancock, Hardin, Mills, Madison, Page, Poweshiek, Shelby, Union, Warren, Wright, Worth and Wayne. In a number of cases no animals were found diseased, the owner stating he had lost several head from symptoms resembling rabies. In such cases where no other circumstantial evidence could be obtained we could not positively pronounce it rabies.

Perhaps the most serious outbreak visited by myself was in Cerro Gordo and Worth counties, where a rabid dog had traveled a distance of no less than seventy-five miles attacking everything in its way, biting a number of cattle, horses and swine and causing great excitement in the neighborhood. The dog was finally shot in the neighborhood of Wheelerwood, Cerro Gordo county, but unfortunately not until he had bitten a girl about twelve years of age. She was at once sent to Chicago and took the Pasteur treatment. I visited the place shortly after the girl returned home and she was apparently healthy, showing slight symptoms of nervous excitement and trembling of the arm and hand injured. Up to the present time she has shown no symptoms of the disease and it is safe to presume that she is past all danger of developing it. Numerous ugly scars were now the evidence of the lacerations produced by the animal. The girl made the statement that when the dog approached her she was standing near a well, the animal coming directly towards her. Thinking the dog friendly she placed

out her hand and it immediately bit her hand and arm, tearing the clothing. The dog then started off to a neighbor's a mile distant where he was shot. The loss sustained during this outbreak was confined mostly to cattle, a few sheep and swine and a couple of horses.

Similar outbreaks may be cited in various parts of the State. In attempting to eradicate the spread of this disease, many obstacles are met with. When once started it is of such rapid development that quite frequently before we reach the seat of the outbreak, large numbers have been exposed and death eventually follows. When an animal is suffering this disease in an advanced stage, we advise the destruction of the same.

In some instances this department has been called upon to pay for stock lost in this manner, on the theory that the dog was the primary cause. No such expenditure has been made, as no stock has been destroyed without the consent of the owner. It is my opinion, that if there are any damages to be paid in a case of this kind, it should be borne by the county where the loss occurs; or if the State should pay for stock destroyed by this department, a special appropriation should be provided for that purpose. With the constant increase of live stock in this State and the additional increase of work in this department, the present appropriation of \$5,000 per annum is not sufficient to meet the actual expense of conducting the investigations. The State of Minnesota appropriates \$19,000 annually, and some of the states pay more.

The following paper, written by Dr. D. E. Baughman, Assistant State Veterinarian, of Fort Dodge, Iowa, will prove of special interest, owing to the fact that he was himself bitten by a rabid dog:

RABIES.

There perhaps has never been a time when it was more important than at the present for the veterinary profession to have a clear appreciation of the subject of rabies in animals and man. There was a time in the period of the profession's existence when there was excuse for differences of opinion in regard to this disease. It was a time when we depended solely upon clinical observation of accidental cases, and when the conclusions were founded upon imperfect evidence. But that time is past. Today we have a science resting upon an experimental basis. Facts and conclusions have been established just as vigorously and positively as in other departments of medical science.

As members of a learned profession it is our duty to know what has been accomplished by scientific investigators of rabies, and particularly is this

duty incumbent upon those who attempt to teach other members of the profession or the laity the facts in the case. We have reached a point where the intelligent and scientific knowledge of the veterinary profession are liable to be unjustly questioned because of a few mistakes of misguided individuals who persist in reiterating beliefs which were never held by a majority of the profession and were discarded and disproved years ago. It appears simply astounding to the writer that there are educated men, much less physicians and veterinarians, who still doubt the contagiousness of this disease, which was known and described in ancient times, and for a century has been the subject of experimental investigation by very able men who have occupied their minds with pathological questions. Nevertheless it is a fact that the sanitarian of today who tries to control rabies meets the same kind of argument which was used to embarrass his profession centuries ago. These arguments are occasionally opposed by some members of humane societies which oppose all conclusions based upon experiments with animals, and while they are doing a great work for domesticated animals they often cast discredit upon science, and by so doing they perpetuate this terrible disease, of which dogs and cats are the principal victims.

Aristotle described rabies 400 B. C. and indicated its transmissibility in these terms: "Dogs suffer from hydrophobia which provokes them to a state of madness; all animals bitten by dogs affected become rabid in the end." From that time to the present we have clear accounts of the disease existing through every age and provoking horror and fear in many countries. It was always said to be caused by the bite of an animal, which animal was generally alleged to be rabid. It was almost universally described as fatal in man and animal.

Aristotle admitted that the disease was fatal to dogs and every other creature which they bite, except man. This early mistake in regard to immunity of man has been handed across the centuries and is still repeated on every hand by those who oppose measures for the prevention of the disease. Therefore it may be freely admitted that there have probably been many in all ages who have doubted the existence of the disease both in mankind and in animal, that numerous articles and books have been written to prove that the disease called "rabies" is not contagious, and that the supposed rabies of man is "lyssophobia," a nervous disorder brought on by fear and excitement.

The medical profession as a whole, however, always recognized the existence of such a disease as rabies in man and the veterinary profession has from its foundation recognized its existence and the contagiousness of the disease. Its schools from the earliest to the latest have constantly taught this doctrine and the present text-books are all unanimous on the subject.

The doubts raised from time to time concerning rabies and its characteristics have been met with scientific experiments. Zinka, in 1804, announced that he had inoculated a dog, a rabbit and a cock with saliva from a rabid dog, taking the saliva with a brush from the animal soon after its death and spreading it over superficial wounds of the inoculated animals. The dog was inoculated on an anterior limb and showed prodromic symptoms on the eighth day and was rabid on the ninth. The rabbit was rabid on the fourteenth day and the cock on the eleventh day. This experiment early in the eighteenth century proved that the disease of the dog, called rabies, was

communicable by inoculation to the dog, the rabbit, and the fowl. It proved it to be a specific disease and that the virus existed in the saliva.

Reiferschild, in 1813, records an experiment in which several dogs were inoculated, part with fluid and part with dry saliva from a rabid dog. These became affected with rabies after eight to ten days.

Berndt, in 1822, inoculated four wethers with saliva from the mouth of an ox which had died of rabies. All of these sheep contracted the disease, the period of incubation being from twenty-two to thirty-one days.

In Hertwig's experiments he produced rabies by inoculation in 37 per cent of cases. Renault produced it in 67 per cent. Haubner gives an average of 40 per cent of cases in rabies which were contracted through bites. Bollinger states that in man infection occurs in from eight per cent to forty-seven per cent of bites. Pasteur says the proportion varies from 16 per cent to 80 per cent. When cauterization is not performed it reaches 83 per cent. Bouley found that 90 per cent suffered after bites on the face; 63 per cent after bites on the hands; 24 per cent after bites on the arms; 77 per cent after bites on the legs and 63 per cent after bites on the body. The susceptibility of sheep is known to be slightest, as the teeth of the biting animal are likely to be cleaned by the wool. Much, however, depends upon the stage of the disease and the abundance and virulence of the virus in the saliva, as well as upon the susceptibility of the subject. Some animals are insusceptible, either naturally or by reason of their having been previously subjected to the action of the virus. Yet, under a full virulent dose nearly all succumb. The theory that rabies kills more animals in the summer than in winter has been weakened by statistics. Burrell has shown, according to the record of cases of rabies in his infirmary from 1859 to 1872, that they were not more frequent in summer than in winter. Three hundred and fourteen cases of rabies of the dog observed at the Alfort school during the years of 1887 to 1890 are divided as follows: January, February and March 130 cases; April, May and June sixty cases; July, August, September fifty cases; October, November and December forty-seven cases. Bouley records a greater number of cases in December, January and February than in any other three months of the year. The real explanation of the greater prevalence in the spring and summer is found in the fact that bitches rut in the spring and a number of the candidates for their favors bite each other fatally. This is aggravated by the fact that the generative instincts are stimulated in the early stages of rabies. This further explains the predominance of rabies in males. The irritable rabid dog antagonizes his male competitors and respects the female object of their common desire. There is of course only one cause of the disease, namely, inoculation from an animal suffering from the disease, although excitement will hasten the eruption in the inoculated animal.

It may be assumed that the virulent principle which causes the disease is an organic germ, but so far all attempts to isolate and cultivate it in pure culture have resulted in failure and the microbe cannot yet be certainly identified.

Rabies agrees with all other germ diseases, in that it develops only after inoculation, in that one attack usually fortifies the system against the second, and that in Australia, Tasmania, New Zealand, St. Helena, South Africa and West Africa, from which mad dogs are excluded, it has never

appeared, while in Buenos Ayres, Hong Kong, and Malta, where they have been allowed freedom, it has become prevalent. What has never occurred in the past need never occur in the future. Cases in which infection is denied because the dog was shut up will be explained by a more thorough investigation. Rabid dogs will leap high fences to reach supposed enemies, and rabid rats and other vermin enter through small holes.

Rabies, like most microbial diseases, is at first confined to the region of the bite and the tissues alone are infected. When fully developed the infection is resident in the blood and all vascular tissues, yet the usual source of infection is through the bronchial mucus and the saliva, both of which are especially virulent and are naturally imparted by the teeth. This virulence is not confined to carnivora, but has been experimentally demonstrated in omnivora and herbivora. Various causes of infection from man to man are on record. Drying of saliva or blood, apart from heat or putrefaction, does not destroy its virulence. The knives fouled on rabid animals have been used for successful inoculation months and years later. Among other methods of infection besides the bite may be named the licking of sores by a dog in the early stages of rabies and the occupation of kennels or stalls that have previously harbored rabid animals. Rabies has been known to attack a second pack of hounds after the first pack had been killed out because of the disease. In one case a man was affected by using his teeth to untie a knot in a rope that had been used to tie a mad dog. Infection in man has been caused by a bite from a dog that had been previously fighting a rabid dog, and again from a scratch of a cat that had been licking its claws. In some cases of incipient rabies in dogs, the saliva has been virulent before any outward symptoms were shown. Hence, all dogs, however sound in appearance, should be objects of suspicion in an infected district.

The anatomical alterations found in autopsies upon rabid animals are neither constant nor specific. Rabies are especially characterized by the absence of important organic lesions. There is emaciation, mucus about the eyes, mouth, nostrils and prepuce; staring coat; venous congestion; the tongue has a dirty brown fur; in the dog, foreign bodies, such as straw, hair, pieces of wood, and clothing may be found in the mouth and pharynx; The stomach is congested and contracted; it contains little or no food, but a mixture of foreign bodies and indigestible substances which are highly characteristic of the disease. Wortly Axe, in a total of two hundred autopsies has found in one hundred and eighty cases or 90 per cent absence of food and the presence of indigestible foreign bodies in the stomach. For him this latter fact is the most important, from a diagnostic standpoint. Post-mortem diagnosis can be established with certainty only by inoculation; but when at the autopsy of a dog which has manifested aggressive tendencies during the past period of life, or which has bitten animals or people, we recognize the ordinary symptoms of rabies, especially the presence of foreign bodies in the stomach, we must, without hesitation, affirm the case to be rabies, and proceed accordingly.

Babes described changes in the nerve cells, with cloudiness of protoplasm. These have been especially noticed in connection with the motor centers in the medulla oblongata, but also in the gray matter of the cerebrum. The nerve trunks, too, may be the seat of congestion, and the fibers undergo a granular degeneration.

The lesions to be especially relied on in the dog are the congestion of the fauces and throat; the congested, infiltrated or ulcerated state of the stomach; of absence of food; the presence of foreign bodies; some congestion of the small intestines; empty or nearly empty bladder; mucus or muco-purulent secretion oozing from various openings; congestion of superficial veins; congestion of the brain and meninges. These with the history of the cases are usually sufficient to identify the disease. It should be added, however, that in the paralytic or lethargic form in the dog there may be an entire absence of foreign bodies in the stomach.

Of the numerous cases in the dog that I have met with in my practice in the last two years, most of them were of the paralytic form. About fifteen per cent of cases have been of the furious form. Ten of the animals were either known to have been bitten or had been exposed to rabid dogs. The remainder were not exposed to the disease to the knowledge of the owners, yet it is possible that they were, not having been confined and having had access to the street at will. The period of incubation varies greatly. In inoculating with potent virus or street virus upon the brain, it is about six days. In other parts of the body it varies from sixteen to two hundred and forty days, with an average of twenty-five days.

Rabies appears under two clinical forms, which are designated by the expression of furious rabies and mute rabies. Formerly these two forms were considered two distinct diseases, but this view has been abandoned long ago. According to Pasteur furious rabies occurs when the brain is invaded by the rabid virus, and mute when it meets the spinal cord first. His claim is that we may produce the former experimentally by directly depositing the virus of the surface of the brain, the latter by injecting it into subcutaneous connective tissues. I rather doubt the correction of this assertion, as I am inclined to think that only a very small per cent of dogs are bitten on the face compared to the number bitten on other parts of the body. While in man the per cent of bites on the face is very small, the majority of cases of rabies in men are of the furious form. By depositing the virus directly on the brain it produces a disease within a very short period of incubation, which possibly accounts for the activity of the symptoms excited by this form of inoculation.

The prevention of rabies can be accomplished in cities and towns only by passing ordinances and compelling owners to muzzle their dogs when the outbreak occurs in the community. The animal should wear an efficient muzzle, as rabies is propagated in nature only by biting. Such a regulation, if strictly enforced, would stop the transmission of the disease and soon lead to its disappearance.

As the disease is just as prevalent in winter as in summer, the dogs should be muzzled the year round, until the disease has made its entire disappearance. However, this is at once opposed by a class of citizens holding it to be cruel and unnecessary. Some muzzles are unquestionably cruel, but a properly made muzzle is not, nor does it greatly inconvenience the dog after he has become accustomed to it. A certain kind of muzzle should be prescribed by the authorities. It should be one which covers the mouth with a wire cage so as to prevent biting, but which does not interfere with the movements of the mouth and the ingestion of liquids. There are many who claim that the dogs do not wear the muzzle at home and that when they

develop rabies and escape it is always when they are not muzzled. Admitting this argument to be true, nevertheless it is a fact that if all dogs were required to be muzzled when in public, the appearance of a dog without a muzzle would attract attention, leading persons to avoid it and causing its early seizure by the authorities. Children might be taught to fear unmuzzled dogs and to keep at a distance. The results which have been attained by muzzles justify the enforcement of a muzzling ordinance whenever there is an outbreak. In Berlin, where a rigorous muzzle law was enforced, the disease was entirely eradicated. Also in Great Britain the muzzle has been adopted with great success.

The treatment of the bite should receive first attention. If possible the wound should be cauterized by actual cautery. If not, chloride of zinc, bichloride of mercury, caustic potash, silver nitrate, or sulphate of copper or iron should be used. Care should be taken to apply it to all recesses of the wound. If mineral acids or other liquid caustics are employed, they may be delivered into the minute recesses through a pipette or a plug of cotton wound around a stick, or with a syringe. A delay for several hours or days is not warrant for omitting cauterization, for in man it has always a good moral effect in preventing lyssophobia and it is possible that the poison may remain for some time in the region of the sore.

Senn's advice is to exercise the adjacent tissues. This may be followed, but not to the exclusion of a thorough disinfection. When a person has been bitten by a dog with symptoms of rabies, the dog should not be killed, but should be chained in a place where it will have no chance to harm any one. There it should be kept until the disease has had a chance to thoroughly develop. If it dies from rabies and the bite has not had the necessary treatment, the bitten person should at once take the famous Pasteur treatment. The Pasteur Institute at Chicago has been established eleven years in which time 1,262 patients have been treated. Of these only seven have died, making a death rate of less than one-half of a per cent. As a remedial agent, the Pasteur treatment is unquestionable effective as is shown by the great per cent of cures obtained.

D. E. BAUGHMAN.

TUBERCULOSIS.

The fact that tuberculosis prevails to an alarming extent among domestic animals in this State cannot be denied. During this period our department had been called on to investigate outbreaks of this disease in the following counties: Allamakee, Adair, Chickasaw, Cerro Gordo, Crawford, Fayette, Greene, Guthrie, Kossuth, Polk, Pocahontas, Sac, Winnebago and Worth.

In a number of instances we found typical cases of tuberculosis. In some cases tuberculin tests were made at the owner's

request. Where the most suspicious ones were tested and a large per cent were found diseased then the owner was advised to dispose of same. No test has been conducted by our department without the voluntary consent of the owner. The various unpleasant features of this work can readily be understood when a large per cent tested react and the owner is informed that the State does not provide the necessary funds to reimburse the owner for the loss incurred. (This lack of funds is explained in another part of this report.)

Whenever an animal is found badly emaciated and in an advanced stage of the disease, it is advisable to destroy the animal at once, but when large herds are tested and a large per cent react and are otherwise in a comparatively healthy condition, then it is advisable to dispose of the infected animals to the nearest packing house for immediate slaughter, subject to federal inspection. Thus the owner will receive its full value in its present condition.

Out of a herd examined belonging to a county poor farm, twenty-three out of sixty head reacted. These animals were killed under the direct supervision of a government inspector, and a large per cent were found wholly unfit for other purposes than the manufacture of fertilizers. The net proceeds brought about \$325.00, which was very satisfactory to all parties concerned. A number of similar instances can be enumerated.

Complaint often reaches us where breeders of high bred cattle have bought a high-priced animal for breeding purposes in an apparently healthy condition, but shortly after showing symptoms of the disease. Later on the animal died from tuberculosis, and the disease had afterwards appeared among other members of the herd.

The practice of some unscrupulous owners to knowingly sell diseased animals should be punishable by law.

Tuberculosis is continually increasing and spreading in every country with the exception of those where active repressive measures are resorted to. Why not learn by observing the errors of others and make a beginning to eradicate this terrible disease? The task of repression would have been comparatively easy a quarter of a century ago. Now it is staggering in its immensity and will require the combined effort of stock owners and the various sanitary boards to check this plague.

The effect of the disease upon milk products is endangered.

The public should be protected from this dangerous source of infection by requiring all dairy herds to be inspected. Many states and some cities in our own State have adopted this method. Among some of the cities that have recently passed ordinances regulating the sale of milk and cream are Fort Dodge and Oelwein, requiring all persons selling milk or cream within the city limits to furnish satisfactory evidence that the cows from which said milk and cream are furnished are free from tuberculosis and other diseases. I hope the time is not far distant when every city will adopt similar methods.

For the benefit of the reader we ask you to read the following able article, written by Dr. W. B. Niles, Experiment Veterinarian of the Bureau of Animal Industry.

TUBERCULOSIS IN IOWA HERDS. IS IT ON THE INCREASE? WHAT SHOULD BE DONE TO PREVENT IT?

Having had an active part in the early investigations of tuberculosis in cattle in this State by the Experiment Station, the writer has noted with much interest all that has since been done toward freeing our herds from the dread disease. The work started by the station has been supplemented by good work on the part of the State veterinary service, by the co-operation of the State veterinary profession and the owners of many herds, by leading editorials from time to time in some of the agricultural papers, etc., but still the progress made toward lessening the number of cases occurring in cattle and hogs cannot be considered satisfactory. During the past year we have heard so little about the trouble that one not familiar with the subject might think that the disease has ceased to be an important factor in the live stock industry. Unfortunately, however, such is not the case. A glance at the meat inspection record at the large and small packing houses shows that tuberculosis of swine, at least, is on the increase. As the disease in the hog is usually contracted by feeding infected milk or the carcasses of cattle that have died from the effects of the disease, it is reasonable to suppose that the trouble is also on the increase in the cattle.

The number of cattle and hogs condemned at the abattoirs for being tuberculous is much greater than is commonly supposed and the aggregate loss is very great. The writer recalls having on one afternoon condemned seventeen large hogs for tuberculosis in one of the large packing houses. Very seldom did a day pass without the disease being detected in one or more animals. The swine raiser should not flatter himself with the thought that as the disease is only detected after the animal has been sold to the packer that he himself is not the loser for a certain per cent of loss is expected and the price gauged accordingly. If no diseased animals were sent to market this loss would not enter into consideration.

The investigations of the Experiment Station showed that the disease in this State prevails most extensively in the dairy herds and breeding herds. As a source of danger to the public health, the dairy is by far the most important, but as a disseminator of the disease among other herds, the breeding herd is

the most dangerous. In the early investigations referred to before, a number of instances were brought to light where the disease had been introduced into the herd by the purchase of a bull from an infected breeding herd. An examination of one farm herd containing a number of full blood shorthorn cattle recently purchased, showed that the diseased animals had been obtained from three different breeding herds. The appearance of the disease in our thoroughbred herds is by no means a thing of recent date. Long before the discovery of the tuberculin test the disease had become so prevalent in some herds that they had been closed out. The sale of infected animals from these herds did much to scatter the disease over the State. The opinion of the writer is that our herds of pure bred cattle have done more in the past toward spreading tuberculosis among Iowa cattle than all other factors combined. This may seem to be a pretty severe indictment but the evidence at hand fully warrants the statement.

While some of the infected herds were closed out and ceased to exist as a source of supply for breeding animals and others were freed from the disease by means of the tuberculin test, yet others still exist in which the disease has gained more or less of a foothold and from which the trouble is no doubt being carried, perhaps unbeknown by the owners, but nevertheless surely to other herds and farms. No herd, however, can become as prolific a source of disease as did some of the bad herds in the past, as the disease is better understood, more quickly recognized and the ailing animals are weeded out to a greater extent than formerly.

Were the disease a rapidly fatal one like anthrax or pleuro-pneumonia, or did it quickly spread through the herd like foot and mouth disease, active steps would long ago have been taken to stamp it out. Instead, however, it usually occurs in a chronic form, is insidious in its attack, and months or even years may elapse before serious symptoms are shown or death takes place. As the affected animal may for a long time appear well and pass any examination except the tuberculin test, it is easy to understand how in the past new centers of infection were started by the diseased breeding herds. For example, the breeder, after weeding out all animals showing any indication of disease, sold, as he supposed, healthy animals for breeding purposes. Instead of being entirely healthy, however, many of them had incipient tuberculosis which later developed and was communicated to the herd in which they were placed. The time between the purchase and the plain development of the disease in the purchased animal was often so long that the source of trouble was not suspected. It is in this way that the disease has been carried from one herd to another and any one who started a new herd and obtained the foundation stock from several sources was very liable to secure one or more tuberculous cattle in the lot which later infected others in the stock.

Could all breeding herds be freed from tuberculosis and kept so, it would go far toward solving the tuberculosis question. That this can be done there is no longer any room for doubt. The results obtained by means of the tuberculin test in the hands of veterinarians and stock men show unquestionably that the diseased herd *can be freed from disease and kept so if the owner so desires and will observe the necessary care.* That our herds of full-blooded cattle have not been freed from disease is largely due to the opposition of those who, for various reasons, have all along refused to consider

the disease a serious one or to recognize the necessity for or the value of the tuberculin test as an aid in detecting the disease in its early stages. Private interests often conflict with what is for the public good, but aside from any relation which the question may have with the public health, and considering it from an economical standpoint alone, for the benefit of both the breeder and cattle-buying public, the herd should be freed from tuberculosis. It is certainly not true economy to breed tuberculosis in the herd and thus take the risk of an occasional loss of an animal and of infecting the swine on the farm, to say nothing of the danger to attendants. That the man who desires to buy full-blooded cattle should be able to buy them free from the disease in question no one will deny, but at present few breeders will warrant their cattle to pass the tuberculin test, and to my knowledge not a single breeder advertises cattle free from the disease. Consequently the one desiring to start a thoroughbred herd of cattle knows not where to buy and is finally forced to take the risk and buy without knowing whether he is getting tuberculosis along with his animal or not. In this respect the one who buys abroad now has the advantage as all purchases are tested with tuberculin by a Government inspector before being shipped to the United States. In this connection it should be noted that many cattle are rejected and that some of the most noted herds in Great Britain have been found tuberculous. If there is any well-founded reason why the breeder should not free his herd from disease and advertise to sell only healthy cattle, the writer has never found it mentioned. With the aid of the tuberculin test and the services of a competent veterinarian, I repeat there is no question but what a perfectly healthy herd can be secured.

In freeing a tuberculous herd from the disease one of the important questions to consider is the disposition of the reacting animals, that is those shown by the test to have the disease in its various stages. If the reacting cattle are badly diseased they should be at once destroyed. The destruction of all the reacting animals offers the quickest and least troublesome way of eradicating the disease. If this be followed by a thorough disinfection of the premises, the most badly diseased herd can be freed from the pestilence. In case the diseased cattle are only slightly affected they may be sold subject to inspection and something realized from them. In case the reacting animals are of great value as breeding animals, what is known as the "Bang Method" has been recommended. This is a troublesome but comparatively inexpensive method of freeing the herd from disease. While it has been successfully employed in Denmark and put into practice by a noted Canadian breeder, it is practicable only where the utmost care is observed and all the details most diligently carried out as long as an infected animal remains on the place. In the application of this method, the various steps should be made under the directions of a skilled veterinarian.

The fact must not be lost sight of, that the most important thing is to free the herd from the disease. The disposition of the diseased animals is of secondary importance. They must in some way be gotten rid of and the more quickly the healthy part of the herd can be freed from all danger of infection by them, the sooner will the disease be eradicated.

Once freed from the disease the herd is in little danger of becoming reinfected unless diseased animals are introduced. The argument sometimes advanced that it would be useless to eradicate the disease because the herd

would become infected from tuberculous people has little weight, for in the first place it is not necessary for a herd to be cared for by a tuberculous person, and second, while the disease in man can be communicated to cattle, many experiments have shown that human tuberculosis is not the common source of the disease in cattle.

No breeder should be led to believe that the herd can be so kept that the disease will not spread if once introduced, for such is not the case. No matter how good the ventilation, and how well fed, etc., once the disease is introduced it will spread and in time involve a considerable percent of cattle exposed. The investigations of the writer on behalf of the station showed that the disease would spread when introduced, even in herds where the cattle were never stabled. Of course stabling in poorly ventilated barns is an important factor, but it is by no means an essential one. The only way to keep the herd free is to prevent the introduction of the germs of the disease as in hog cholera, glanders and other contagious diseases. This is the *essential* thing, but one often overlooked in dealing with all contagious affections.

The editor of *Wallaces' Farmer* once said in an article entitled, "A Practical Way to Get Rid of Tuberculosis," "if we had a herd of cattle in which we suspected there were tuberculous animals, we would employ the best veterinarian we knew and have him test the herd." The writer will go the well-known editor "one better" and say that if he had a herd of cattle gotten together from various sources we *would suspect* that it contained one or more cases of the disease and would test it with tuberculin, and if the disease was found present, would at once take steps to eradicate it.

We believe with the editor of the article referred to, that the breeders have much to gain and nothing to lose by establishing the fact that they are breeding cattle only and not cattle and tuberculosis combined. It is to be hoped that in the near future that at least the most progressive owners of our thoroughbred herds will follow the example so well set by Senator Edwards of Canada and a few others and free their herds from the disease.

W. B. NILES.

FEDERAL MEAT INSPECTION. .

For the benefit of those unfamiliar with the methods of federal meat inspection, we publish a very interesting article written by Dr. J. W. Griffith, Assistant State Veterinarian of Cedar Rapids, Iowa.

FEDERAL MEAT INSPECTION.

Federal meat inspection as conducted at the present time has been made possible by an enactment of congress, approved March 3, 1891, entitled, "An act to provide for the inspection of live cattle, hogs and the carcasses and products thereof, which are the subject of interstate commerce and for other purposes, and the various amendments thereto," which have since been approved by the President.

For fear of being misunderstood, let us say that the inspection of horse flesh is carried on in separate abattoirs and the products are in no way connected with the animal products usually used for food in this country, but it is intended to facilitate the exportation of these products to countries using them. No statistics to my knowledge are available on this point. The examination of live horses for exportation has also been provided for the same as cattle. The above enactments provide that the Secretary of the Department of Agriculture shall have authority to make rules and regulations and appoint officers to carry out the provisions of the law as was natural. This work has been assigned to one of the two large bureaus of this department, namely, the Bureau of Animal Industry.

This bureau had its origin in the enactment of congress approved May 29, 1884, over fifteen years ago, entitled, "An act for the establishment of a Bureau of Animal Industry to prevent the exportation of diseased cattle and to provide means for the suppression or extermination of pleuropneumonia and other contagious diseases among domestic animals." Please note the language, "To prevent the exportation," etc.

The above act was conferred upon the then Commissioner of Agriculture (for such was his title at that time), its chief not as yet being a member of the President's Cabinet.

The immediate cause of the Bureau of Animal Industry was the urgent need by the Federal Government of official information concerning the nature and prevalence of animal diseases, and the means required to control and eradicate them, and also the necessity of having an executive agency to put into effect the measures necessary to stop the spread of the disease, and to prevent the importation of contagion into the country as well as to conduct the original investigation through which further knowledge might be obtained. Our export cattle and sheep had then recently been refused admission to Great Britain, and condemned to slaughter on the dock where landed, because of alleged contagious diseases in this country dangerous to live stock. Our pork had been prohibited entrance into most of the continental countries of Europe, because it was alleged to be affected with trichinæ and therefore dangerous to the lives and health of the consumer. Hog cholera was raging more or less all over this country, and it was an open secret that many diseased animals were being slaughtered and much diseased meat was being sold, not only in this country but in our foreign markets as well, where a more or less rigid system of inspection for their home products was being enforced.

Laws and systems of inspections were in operation in some countries a good many years before meat inspection was thought of in this country, but it is also a fact that widespread animal plagues were in existence there long before they were here, and some of those plagues we American veterinarians know nothing about, except from literature on the subject, they never having obtained a foothold in this country and are not likely to now that we have quite an effective quarantine system in force.

In the latter 80's the demand of foreign governments began to take form in the exclusion of our animals and animal products from their shores, and our exporters were having no end of trouble by the restrictions placed upon the trade by these demands.

The rules of inspection are: "All animals found on either ante-mortem or post-mortem examination to be affected as follows are to be condemned

and the carcasses thereof treated as indicated in section 7: hog cholera, swine plague, charbon or anthrax, rabies, malignant epizootic, catarrh, pyaemia, and septicaemia, mange or scab in advanced stages, advanced stages of actinomycosis or lumpy jaw, inflammation of the lungs, the intestines of the peritoneum, Texas fever, extensive or generalized tuberculosis; animals in an advanced stage of pregnancy or which have recently given birth to young; any disease or injury causing elevation of temperature or affecting the system of the animal to a degree which would make the flesh unfit for human food; any organ or part of a carcass which is badly bruised or affected by tuberculosis, actinomycosis, cancer, abscess, suppurating sore, or tapeworm cysts must be condemned; animals too young and immature to produce wholesome meat; animals too emaciated and anæmic to produce wholesome meat; distemper, glanders, and farcy and other malignant disorders, acute inflammatory lameness and extensive fistula.'"

Total numbers of post-mortem inspections for fiscal year ending June 31, 1898, 31,116,833. Out of this number 59,386 were condemned. The following countries require microscopical examination of pork for trichinæ: Germany, France, Denmark and Austria. There were 2,227,740 hog carcasses microscopically examined last fiscal year; 41,597, or 1.87 per cent, contained living trichinæ, class C, and 25,913, or a little over one per cent, were thrown out for having suspicious traces of trichinæ cysts, or trichinæ-like bodies, class B. The exports of this pork to the above named countries requiring this inspection was 108,928,195 pounds. The benefits to our stock-raisers derived from this branch of the inspection is wholly indirect, as not a pound of this meat is stamped or certified to as such, except what goes direct to those countries demanding such inspection. The cost of this inspection per head last season, exclusive of microscopic inspection, based on the number of ante-mortem inspections was eighty-eight one hundredths of a cent. This covers the cost of the ante-mortem inspection and the million packages of meat and branding or tagging over twenty-five million quarters, carcasses or parts of carcasses of meat; the issuing of some forty thousand export certificates and other incidentals. The cost of the microscopic inspections was 8.9 cents per carcass, or a little less than one fifth of a cent per pound of the product exported to countries requiring this inspection.

This work along with the inspection of animals for export, the supervision of the movement of southern cattle, and the inspection of animals imported, has been done to prevent the spread of disease among the animals in the United States, to protect consumers from diseased meats, to secure the arrival of our animals and animal products in foreign countries in good condition, and to maintain the reputation of these products at home and abroad

And while this bureau is operated at a cost of some three quarters of a million dollars per year, it saves at a conservative estimate, many times its cost in the prevention and spread of disease among animals, besides giving the consumer a chance to be reasonably sure of eating healthy meat, and while it does at times entail considerable pecuniary loss upon the unfortunate owners of diseased animals which could otherwise be marketed, they along with the other producers share in the profits which come from an increased consumption and larger market for these products on account of the elimination of those detrimental to public health. J. W. GRIFFITH.

VERMINOUS BRONCHITIS.

Our attention has been called to "Verminous Bronchitis," which has existed in many communities, especially the southern portion of the State. Feeling that this malady warrants a more specific description, an article by Dr. J. J. Repp, professor at the Experiment Station, Ames, Iowa, will prove interesting and beneficial to our readers.

LUNG WORM DISEASE—VERMINOUS BRONCHITIS—VERMINOUS PNEUMONIA—VERMINOUS BRONCHO-PNEUMONIA.

Of the various names applied to this affection the term broncho-pneumonia is the best, for the process consists in an inflammation of both the lung substance and the bronchi, or tubes, which convey the air to the lungs. It is as the name indicates, due to worms which invade the air passages.

ANIMALS AFFECTED.

Of the domestic animals which are subject to this trouble may be mentioned cattle, sheep, goats, swine, cats and very rarely horses. It should be borne in mind that it is usually the young animals that are afflicted with this disease. While it affects the young of various species there is seldom any manifestation of the presence of worms in the adult members of the species, these latter apparently being able to resist the encroachments of the worms while the former are unable to ward off the attacks of the parasites.

CAUSE OF THE DISEASE.

Verminous broncho-pneumonia is caused, as the name indicates, by worms which get into the air tubes and the lungs. These are of the class known as thread worms and are, as a rule, about as thick as pack thread and from two to four inches long, although one common variety in sheep is only three fourths of an inch to one and a half inches long. These worms are smooth and white as viewed by the unaided eye. There are five varieties of worms which infest the air passages of domestic animals commonly in Iowa. These may be classified as follows:

1. For Cattle:
 - (a) *Strongylus micrurus*.
 - (b) *Strongylus pulmonaris*.
2. For Sheep and Goats:
 - (a) *Strongylus filaria*.
 - (b) *Strongylus rufescens*.
3. For Swine:
 - (a) *Strongylus paradoxus*.

The other lung worms and the other domestic animals may be left out of consideration so far as Iowa is concerned.

In a herd of animals in which the disease has once obtained a foothold it is quite probable that the worms may spread from one animal to another through the young worms or eggs being coughed up by an affected animal and swallowed with the food or drink or inspired in the air by a healthy animal. It is known that the eggs and young worms, when expelled by an affected animal, find lodgment in the water ponds or upon moist vegetation and live there for a long time. Later if these eggs or young worms are taken into the healthy animal in the food or drink, this animal will become infected with the disease. It is likely that most animals are infected in this way. It is well known that wet, rainy seasons are favorable to the development of the disease. During the wet summers of 1902 and 1903 the disease was extremely prevalent. This is doubtless due to the fact that in such a season almost every acre of ground affords some spot sufficiently wet to furnish a good harboring place for the eggs and young worms. It is not improbable that every year a few animals in a herd of cattle, sheep or swine are affected with lungworm disease, but that the disease does not spread because the lack of excessive moisture is not favorable to the propagation of the young worms, and as a consequence the conditions for transmission of the disease are not good. When a wet season comes and conditions of transmission are good the disease becomes very prevalent.

PREVALENCE AND ECONOMIC IMPORTANCE.

During the last two years, beginning with the very wet and rainy summer of 1902, lungworm diseases have been very common in Iowa, especially amongst calves and pigs. That attention has not been called to the trouble more in sheep and goats may be due chiefly to the comparatively small numbers of these animals in this State.

The loss sustained by farmers on account of these worms has been very great, certainly hundreds of thousands of dollars. Not so frequently has the loss been due to the death of the animal, for the death rate in an affected herd is not very great, but has been due rather to the interference with the growth and thrift of the animal which rendered it unprofitable for feeding purposes. It is not uncommon to find a calf from six to ten months old a victim of this disease but little larger than a good thrifty four-weeks-old calf. At times the disease is extremely prevalent in a given community. I have known several hundreds of calves to be affected within a radius of a few miles.

Symptoms. The symptoms in all the various species of animals are in a general way the same, so, for the purpose of this article, it is not necessary to describe them separately.

The first thing noticed, perhaps, is a general appearance of unthriftiness, although the appetite is not diminished. It is rather increased if there is any change. Cough is an early symptom and is present throughout the disease, growing worse and worse as the condition advances in severity. In the latter stages the cough is extremely violent and comes on in spasms. The animal sometimes becomes almost suffocated and often falls to the ground in one of these fits of coughing. The breathing is at all times difficult, the animal breathing rapidly and with a considerable noise, but it is especially so when aggravated by a fit of coughing. In one of these coughing spells the animal stands with its nose extended, its legs spread out, its

mouth open, tongue protruded and saliva running from the corners of the mouth. The eyes bulge and the mucus membranes are bluish in color.

It should be mentioned that lungworm disease is at its worst during the last half of the year. The infestations by the worms occur during the latter part of the spring and beginning of summer. By early autumn the disease is well advanced and, as a rule, by the opening of the new year the affected animals have either died or are on the road to recovery.

CHANGES IN TISSUES.

Only a few words on this point will be needed here. The carcass will be found much emaciated, the coat or wool will be rough and tangled. On opening the chest the lungs will be found to show irregular, fleshlike, solid areas, and on cutting open the windpipe and air tubes, worms will be seen; often in amazing numbers. In one calf I have obtained a double handful of worms, they being so numerous as to almost completely block up the passages. In some cases, especially the sheep, although the worms may be in very large numbers, they will be in the smaller tubes and in the lung tissues, and thus will be found with greater difficulty. The other organs and tissues will not show any changes appreciable to the ordinary observer.

Prevention. What has been said as to the cause indicates what is to be done in preventing the disease. Especially in wet seasons the young animals should be kept as much as possible upon high, well-drained ground. It is very bad to give them access to low, wet ground or ponds. They should be given good, clean food, and above all, should have pure well or spring water to drink from tanks or troughs which are clean. If any animals become affected they should be separated from the healthy ones.

The vitality of the animals should be kept up by the best of food and care. It is usually debilitated animals that fall easy victims to the disease.

Treatment. This is difficult at best and not very promising. It should be emphasized that prevention is the important thing. In the first place when animals are found to be affected they should be put in new quarters where they are not likely to receive further infestation by worms. They should receive the most nutritious food and water and should be well sheltered against inclement weather. All this is done to keep up the vitality and thus enable the animals to successfully combat the devitalizing influence of the worms.

As to medicinal treatment there is considerable difference of opinion. It may be well where practicable to administer to the animals with their food some tonic powder which can be prescribed by a veterinarian. Such drugs as iron, arsenic, nux vomica and gentian are indicated. It is probably useless to give any medicine by the mouth with the hope of directly influencing the worms in the lungs. For this purpose injections are often made into the windpipe or inhalations of medicated vapors are given. Good results are reported by some veterinarians from the injection into the windpipe of the following mixture:

Oil of turpentine.....2 drams.
Carbolic acid.....10 minims.
Chloroform... .. $\frac{1}{2}$ dram.

or

Carbolic acid.....10 minims.
Chloroform..... $\frac{1}{2}$ dram.
Olive oil.....1 dram.

This treatment should be given only under the direction of a veterinarian. It is scarcely applicable to swine though it might be used even in them. The formulæ given above contain an average dose but it must be regulated according to circumstances.

For inhalations the substance in most common use is sulphur. The animals should be placed in a closed building and a dish of burning sulphur placed with them. The inhalation should not be allowed to go on so long as to produce a bad effect. It may be repeated daily until the proper effect is produced.

JOHN J. REPP, V. M. D.

ADYNAMIC CATARRHAL FEVER.

Our department has discovered this disease in different forms in various parts of the State, depending largely on its accessory causes.

It sometimes assumes a complicated form, which oftentimes accounts for its differential diagnosis and results.

The following paper by Dr. D. U. Shipley, Assistant State Veterinarian, explains a very interesting case.

CATARRHAL FEVER.

On July 24, 1902, I responded to a State call forwarded by Dr. Koto and proceeded at once to Ocheyedan, Osceola county, Iowa, and visited the farm of Mr. Timmons, some two miles northwest of Ocheyedan, whose horses were said to be affected with anthrax, this diagnosis having been given a day previous by a veterinarian from Minnesota. Upon arrival I found eight head of horses on the premises, six of which presented the following symptoms: temperature ranging from 104 to 106 F., great nervous prostration, rapid, weak pulsation, accelerated respiration, odema of the extremities, loss of appetite. The temperature of the remaining two was slightly abnormal, apparently just coming down. Upon inspection of the premises I found sanitary conditions good, the water supply was from a deep well on a side hill, where contamination by surface drainage was impossible. Food consisted of good oats and new-made prairie hay. This hay was mostly upland and I was informed that the land upon which it was made had not been overflowed with the exception of a small slough and the

latter had not been mowed. Upon inquiry into the history of the case I learned that a horse had died upon the farm some six months previous, this case was attended by an empiric surgeon and I could not determine from the history Mr. Timmons could give, what might have been the cause of the death. No other ailment has affected these horses or any domestic animals on this farm until two or three days prior to our visit. While the symptoms presented were some of those of anthrax of the horse, they were also the symptoms of influenza or catarrhal fever and from the further fact that anthrax of the horse rarely occurs except in localities where it exists in an ezootic form and besides where the ox and all domestic animals may become infected. I rather doubted this outbreak being anthrax but owing to the similarity of symptoms and the positive diagnosis of a veterinarian the day previous, I concluded best to establish a quarantine and await developments. Meanwhile I prescribed treatment.

On August 1st, seven days later, I received a letter from Mr. Timmons, stating that the horses were all getting well and requesting a removal of the quarantine. Upon the following day I again visited the premises and found all of the cases well on the road to complete recovery, so removed the quarantine and left Mr. Timmons a happy man.

The fact that all these cases recovered proved they were not affected with anthrax, as the latter disease is usually fatal, with few exceptions. We therefore concluded it was influenza, and accounted for the severity of these cases from the fact that they were all work horses and had worked when coming down with the disease. Influenza had been more or less present in some form in this section of the State for the last two years. No disease yields more readily to proper treatment, and no disease is more fatal if neglected, or the affected animal exposed or improperly treated.

L. U. SHIPLEY.

FOOT AND MOUTH DISEASE.

Iowa and its adjoining states have so far escaped this worst of all calamities to the cattle interest, and it is to be hoped that it will escape for all time to come.

During the early winter of 1902 a severe outbreak of this disease appeared in the United States, but it was confined principally to the New England states. It spread rapidly for a time and but for the determined efforts of Hon. James Wilson, Secretary of Agriculture, and Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, would have continued its onward march to the Western states. The vigorous policy of this work was under the direct supervision of Doctor Salmon and his able assistants. With unlimited means, the work of eradication was pushed to completion.

During this period the public was in a state of general alarm and several times I received word of a supposed outbreak of this disease in different parts of the State. For fear of arousing any suspicion or alarm and injury to the cattle industry of the State, I made a very prompt and quiet visit to the location and upon examination found it to be a mistaken diagnosis. In some instances ulcerative stomatitis and ergotism were found, which symptoms resemble foot and mouth disease.

For a more complete and better understanding of the disease and the methods adopted by the Bureau of Animal Industry in eradicating this disease, the following article, written by Dr. G. A. Johnson, inspector of Bureau of Animal Industry, Sioux City, Iowa, will be interesting and instructive, the doctor being called to assist in the work and spent several months in the New England States and so speaks from experience.

APHTHOUS FEVER, OR FOOT AND MOUTH DISEASE.

By this term is meant a contagious disease of domestic, farm animals, especially cloven-footed animals, as cattle, sheep, goats and swine, and in wild animals such as deer, antelope, buffalo, giraffe, camels, etc. It is also sometimes seen in the horse, dog, cat and chickens, and more frequently in man.

This disease is supposed to have originated in Western Asia or South-eastern Europe, and has been known for many years in most European countries under various names as aphthous disease, vesicular disease, mouth rot, mouth disease, malignant disease of the hoof, foot rot, etc.

It is now known in Germany as klauenseuche, in France as fièvre aphteuse and in Italy as afta epizootica, while in England and America it is known as aphthous fever, epizootic, apthra and foot and mouth disease. It is one of the most contagious diseases that affects the lower animals, that is, it is one of the diseases most easily carried from one animal to another and from one place to another. It spreads very rapidly and easily. It may spread by a susceptible animal, one that will contract the disease by coming in contact with a diseased one, or by being stabled in a barn where diseased animals have recently been kept, or drinking or feeding out of the same trough, dishes, etc., that have been used by diseased animals, or by coming in contact with the excretions of diseased animals, and instances are on record where healthy animals have contracted the disease while passing on a road upon which animals affected with the disease had been driven some little time before. The disease is frequently carried from one place to another by people and the smaller animals, such as dogs, cats, rats, fowls, and in fact any animal going from an infected place may carry the disease to healthy animals. Railroad cars and public stock yards are very fruitful sources for spreading the disease in this country. The disease is readily conveyed from one species to another as from cattle to sheep or swine, and vice versa. It is sometimes transmitted to mankind, especially children, by

the use of milk from the diseased cows, or by getting some of the virus into wounds.

The death rate of the disease is usually quite low, ordinarily running from one to five out of every hundred affected, but in some violent outbreaks it may run up to 20 and 50 per cent in adults, and from 50 to 80 per cent in sucklings. The death rate usually represents but a small part of the actual loss caused by the disease. In the countries of continental Europe where the disease is most prevalent, it is reported to cause more actual loss than any other of the animal plagues. This loss is composed of factors among which may be mentioned loss by death; loss of milk; loss in milch cows, in that part or all of the udder is frequently destroyed; the excessive loss of flesh; this is very material, owing to extensive range of animals affected; and last but not least, of the expense and inconvenience of keeping the animals quarantined during their sickness, and the final disinfection of the premises.

PERIOD OF INCUBATION.

This is the time after which an animal has been exposed and before it presents any symptoms of a disease. This varies from three to fifteen days, but the average time is from three to five days for natural infection and from twenty-four to seventy-two hours when inoculated.

Symptoms. The early stage of this disease is manifested by more or less fever which usually disappears when the vesicular stage begins, then the loss of appetite, decrease in the flow of milk, followed by the formation of vesicles, blisters in the mouth, then on the udder and teats in females, and also in the interdigital spaces,—the soft tissues between the hoofs. This order of the appearance of the lesions may vary in different animals, or in some it may be entirely lacking, but this was the most common course and manifestations observed in this country during the outbreak of 1902 and 1903.

The vesicles usually contain a clear or slightly reddish yellow colored serum fluid, but in some cases the vesicles on the udder may contain a thin yellowish pus. After a short time these vesicles rupture and the mucus membrane in the mouth, or the skin, udder and hoof will peel off leaving a denuded, raw surface, which is very painful. When the animal is thrifty and the surroundings are good, the tendency is for these wounds to heal rapidly. The sores in the mouth usually cause more or less slaving, those of the udder and teats more or less pain and difficulty in milking, while those of the feet cause more or less lameness. Usually the first symptoms that would attract the attention of the ordinary farmer would be slaving, loss of appetite or other difficulty in eating, yet lameness may be the first indication in some cases. When slaving is present an examination of the mouth will reveal more or less denuded patches on the tongue, roof of the mouth, cheeks and gums, especially the dental pad, that portion of the upper jaw that comes in contact with the front teeth when the mouth is closed, and sometimes the lips will be affected.

In the early stages of the disease only vesicles may be seen as whitish, raised patches on the membrane. A little later may be seen vesicles just forming, ruptured vesicles and denuded surfaces, and still later denuded surfaces healing and scars of those already healed. The mouth lesions are usually accompanied by a sucking or smacking sound made with the lips.

In the early stages of the lameness the animal may hold the foot up and shake or kick it. At this time an examination of the foot will disclose more or less heat and pain, with a small amount of swelling in the interdigital space. As the disease progresses vesicles are formed that soon rupture erosions, raw surfaces that heal somewhat slowly because of the filth surrounding the foot.

When the feet are badly affected the animal will usually lay down more or less. When the udder is affected the vesicles usually form rapidly and cover considerable of the surface of the organ and the teats. The vesicles soon break and the loose skin peels off, leaving extensive erosions that are quite painful and materially interfere with milking. In severe and neglected cases vesicles may form on the membrane lining of the milk ducts in the udder and teats, producing an inflammation that frequently results in abscesses of the udder and destroys part or the whole of this organ, and sometimes produces blood poison in the animal.

In rare cases vesicles may form on other parts of the body, as the abdomen and chest. Sometimes the lesions may extend down to the throat and produce pharyngitis, inflammation of the throat, in which case there may be more or less tenderness of the parts, accompanied with some cough. Or it may extend farther down and involve the trachea and lungs, resulting in pneumonia, or to the intestines resulting in enteritis, inflammation of the intestines. This form is more frequently seen in young animals that are fed on the milk of diseased animals. Both the pneumonic and enteritic forms are usually fatal. When the mouth lesions are extensive, salivation is very profuse and usually accompanied by a profuse discharge of a light-colored, slimy mucus from the nostrils. In these cases, especially during the latter stages the breath, and discharges from the mouth are very fetid. This form is often called mouth rot. When the feet are extensively diseased or neglected the hoofs and even the bones of the toes may slough off, thus leaving the animal crippled. This form is often termed foot rot.

In a large majority of cases the lesions are not so extensive, frequently being confined to the mouth and feet and in such cases the animal usually recovers in about two weeks. Yet there is always a possibility of severe cases developing, especially in neglected cases. Damp, poorly ventilated stables, wet yards, poor feed and lack of care always tend to aggravate the disease, while dry, well ventilated barns, dry lots and good food and care always tend to lessen the severity of the disease. In sheep, goats and swine the malady is largely confined to the lesions of the feet.

In apthous fever there is little tendency towards the formation of pus in the lesions except in the feet where it is due to a secondary infection, and in the udder where abscesses are formed.

DIFFERENTIAL DIAGNOSIS.

There are several infections that on superficial examination present more or less the symptoms of apthous fever; among these may be mentioned burns in the mouth due to some escharotic food or drugs, as when blistering or mercurial applications have been used and the animal has been allowed to lick the parts and lesions may form in the mouth that resemble the mouth lesion of apthous fever, but in such instances the history of the cases and

the absence of udder and foot lesions will usually serve to distinguish the disease; again, such conditions have no disposition to spread.

Ordinary foot rot or hoof ail, an infection that is usually due to lack of care of the feet, injuries and the filthy conditions in which the animals are kept, might sometimes be mistaken for aphthous fever for in this disease the animals are quite liable to lick their sore feet and the ichorous discharge of the feet often produces sores in the mouth that somewhat resemble the mouth lesions of aphthous fever, but the history of the outbreak, the conditions under which the animals are kept, failure of the disease to spread to other species, or to animals of the same species that are cleanly kept, the absence of udder lesions and of mouth lesions in those cases kept so that they cannot lick their feet, serve to differentiate the disease.

When the cattle that have been stabled are first turned out to graze in the spring, when grass is short and scarce, especially in brush pastures, they very frequently injure the mucus membrane so that the mouth will present lesions quite similar to those of mild aphthous fever. The history of the cases, the absence of foot and udder lesions, and the inability of the conditions to spread to other animals should serve to distinguish the cases.

Ulcerative stomatitis, a disease that affects nearly, if not all domestic animals, caused by some derangement of the digestive system, usually as a result of poor and improper feeding, presents a condition in the mouth that somewhat resembles the mouth lesions of aphthous fever, although a greater or less number of animals that are kept under the same conditions are likely to be affected. The disease has no tendency to spread to animals kept under more favorable conditions. Again the udder and foot lesions are usually absent in this disease. These facts should be sufficient to differentiate the two diseases.

Another disease that has been quite prevalent in this country, especially in sections of Iowa and Illinois, that clinically presents many of the symptoms of and has often been diagnosed aphthous fever is some form of mycotic stomatitis, caused by the animal eating food that is contaminated with some fungi or mould. In this disease there is more or less soreness of the mouth and feet, but the vesicular stage is usually lacking or not pronounced, especially on the udder and feet. Again the disease is usually confined to cattle and does not spread to other species of animals, nor to cattle that are kept under different conditions. These facts should serve to distinguish it from aphthous fever. While upon a superficial examination the symptoms of the above disease may often present a close similarity to those of aphthous fever, a minute examination will usually demonstrate that the lesions differ more or less in the following points: In aphthous fever the lesions are usually very superficial, extending only through the mucus membrane or skin, which is sloughed away leaving a denuded surface that tends to heal rapidly without the formation of much pus, except in the feet, while the lesions of the above disease are more prone to extend through the membrane or skin and down into the deeper tissues and are accompanied with the formation of considerable pus. Again as mentioned above, the udder lesions usually well marked in aphthous fever are seldom present in the other disorders. And finally the very active contagion of aphthous fever among all cloven-footed animals whether they are kept under similar or different conditions is the same, while the other diseases are usually confined to animals of the same species that are

kept under similar conditions and rarely extend to animals kept under different conditions or to other species.

The contagious nature of apthous fever can usually be demonstrated by collecting some of the saliva of diseased animals on the hand or a cloth and rubbing it upon the gums or feet of a healthy animal. If the disease is apthous fever, the animal thus inoculated should show symptoms of the disease in from twenty-four to seventy-two hours. Another practical way would be to place a pig or sheep beside a diseased cow or vice versa.

Treatment: The treatment of apthous fever should always be directed towards preventing its spreading. In those countries where the disease is native or prevalent and extends over an extensive territory with a large number of animals affected, it may be advisable to attempt to treat the animals and endeavor to cure as many and as rapidly as possible. But in a country where the disease is foreign, as in the United States, and has not secured an extensive footing, it is not advisable to treat the disease with a view of trying to save the diseased or exposed animals, because it is almost an impossibility to prevent the spread of this disease while affected animals are kept alive. In order to prevent the disease from being carried to other places all diseased and exposed animals on the place must be closely confined, and all fowls, dogs, cats, rats, etc., in fact all animals must be kept away from the infected premises. People must also be kept away, and the attendants must not be allowed to leave the place without first having thoroughly disinfected their clothing and person. Susceptible animals coming in contact with a piece of paper blown from an infected farm near by might contract the disease. The carcasses of dead animals must be buried deep in lime or burned, then after all the animals on the place have had the disease the buildings and surroundings must be thoroughly disinfected. The remaining hay and fodder, etc., must be destroyed and the manure thoroughly disinfected. In fact all substances that could harbor the germs must be disinfected or destroyed by fire. This is absolutely necessary to success, even when no new animals are allowed about the place for a number of months, because one attack of this disease does not immune the animals against a second attack, consequently animals that have recovered from one attack are liable to contract the disease again if they are kept in premises that are not disinfected after each outbreak. And after all these precautions have been rigidly carried out there is no positive assurance that the disease has been stamped out, for it is held by good authorities that the disease may break out again in the form of a relapse in animals that have apparently recovered. Hence it must be plain to all how difficult it is to prevent the spreading of this disease when the diseased animals are allowed to live and be treated. Again it is a question if ordinary animals would be worth enough to pay for the extra expense necessary to treat them and maintain a strict quarantine, to say nothing about the danger of the disease spreading.

APHTHOUS FEVER IN THE UNITED STATES.

It has been reported that this disease has been introduced into this country on several occasions but it may be questioned if these early outbreaks were really apthous fever. At least none of these became sufficiently extensive to attract much attention or to cause any special interference with the stock industry until the outbreak that occurred in the late fall

or early winter of 1902. At this time it was discovered that genuine apthous fever existed in eastern Massachusetts and Rhode Island and later it extended to southern New Hampshire and the southeastern corner of Vermont. Just how and when this disease was introduced into this country that resulted in this outbreak has not yet been fully determined. It was spread quite largely by diseased animals infecting the Brighton stock yards and the sale of a couple of infected herds at public auction. As soon as it was fully demonstrated that the outbreak was apthous fever, active measures were taken by the Hon. James Wilson, Secretary of Agriculture, through the Bureau of Animal Industry, with the co-operation of the State authorities to stamp out the disease. The work was under the direct supervision of Dr. D. E. Salmon, chief of the bureau, and his able assistant, Dr. S. E. Bennett, who was then in charge of the bureau work at Boston. The plan that was formulated and successfully carried out was to close the port of Boston for exporting or importing animals, also to close all stock yards in the infected states, and stop transporting stock into, out of or through the infected states, except that stock could be shipped to abattoirs having government inspection for immediate slaughter, and further to destroy all infected herds and thoroughly disinfect the premises. The federal government agreed to pay 70 per cent of the appraised value of all stock destroyed and full value for the other property destroyed in disinfecting the premises. The stock was to be appraised at its actual value when healthy. This work was carried on by a corps of faithful, conscientious employes of the bureau. So thoroughly was the work done that in no instance was the disease carried from infected premises to healthy animals, nor did any healthy animal contract the disease by being placed in the barns that had been disinfected after the diseased animals had been destroyed, and the outbreak was virtually stamped out by May 15, 1903. No new diseases were heard of from that time until the latter part of August, 1903, when a suspicious case was reported in the town of Wakefield, Mass., which upon investigation proved to be apthous fever. It was demonstrated that this outbreak was the result of some experimental work and that it had no connection whatever with the outbreak that occurred earlier in the season. Had it not been that quite a force of men were still being held at Boston to investigate suspicious cases and that the outbreak was reported as soon as suspicious symptoms developed, the disease might have spread from this center and caused more or less loss. But under the circumstances it was confined to the one herd. The bureau and especially Doctor Salmon were severely criticised for the methods adopted in dealing with the outbreak and many parties did all in their power to obstruct and retard the work. A great cry was raised because the animals in the infected herds that had not yet developed the disease were slaughtered with the diseased ones, yet the parties who made this cry did not comprehend the fact, or at least they would not admit it, that the disease would run through the herd and that cattle that were apparently healthy today might present symptoms of the disease tomorrow and so on through the entire herd. If the diseased ones were to be destroyed, why was it not better to kill the entire herd as soon as possible instead of stringing the work out for several days? Again, the place could not be disinfected while live animals remained to reinfect it, to say nothing about the danger of the disease spreading, hence it will be seen that this cry was wholly from an obstructionist point of view.

Taking into consideration the wider extent of the outbreak, the season of the year, the cold and snow and the many obstacles that had to be met with at every turn, Doctor Salmon and his worthy assistants may well feel proud of their good work and the country is to be congratulated upon having been freed from such a plague at so small a cost. While we can only surmise what the consequences would have been had the disease been carried to the stock raising regions of the country, we can be positive that the loss would have been appalling.

G. A. JOHNSON.

SWINE PLAGUE.

This disease is familiarly known as "hog cholera." During this period the disease has appeared in various parts of the State, but fortunately not to an alarming extent. Some sections of the State are today free from the disease, where a few years ago it raged with such violence that the production of pork almost ceased for a time.

The theory that it is of a spontaneous origin is, however, erroneous. There is sufficient evidence that it is due to a contagion. It comes from its own kind and produces its own kind. Its method of communication is not always obvious. The disease disappears for want of susceptible material to work upon.

Treatment along therapeutic lines is of little benefit, many of the so-called "hog cholera remedies" being valueless, a waste of money and a disappointment to the investor.

The serum therapy or immunizing treatment conducted by the different experimental stations is very satisfactory, and may result in much good.

I feel that this report would be incomplete without a few words from Dr. H. E. Talbot upon the workings of our new veterinary law. Doctor Talbot is assistant State Veterinarian and also Secretary of the Iowa State Veterinary Medical Examining Board.

THE VETERINARY LAW.

Time and space will not permit me to go into details regarding the workings of our new veterinary law, but a few words of explanation, regarding our progress since its passage and our aims for the future, may be of interest to the readers of this report.

The law was originally framed with a view to meeting all contingencies which might arise and yet the board has been confronted almost daily by conditions for which there was no precedent and which required our earnest and thoughtful consideration.

It has been our aim first, last and all the time to promote the general welfare of the veterinarians of the State and we are greatly encouraged by the hearty co-operation which we have received at their hands.

The veterinary profession of Iowa is now upon a basis which would have exceeded our fondest dreams of yesterday. We are daily receiving the general recognition and support which only the education of the public renders possible and I truly feel that the day is not far distant when the veterinary profession will be considered one of the most honorable for which our youth can be trained and that the inducements for honest effort will be such that the best intellect in the land may be enlisted in behalf of the dumb beast which suffers but complains not.

I may be considered optimistic when I predict this happy termination of the many evils which have surrounded us in the past, but the following lines from one who knew and appreciated our condition holds out scant hope for us in the spiritual world, so we would fain achieve success in this:

"THE VET."

When accounts on earth have been marked off the ledger
And we're all a-takin' chances in the sky;
When we're sort o'-blockin' up the golden stairway
'Til the angels have to crowd a-gettin' by;
I'll just bet Saint P-ter'll come and tell us fellers
That he hasn't any vacant rooms to let,
That we'll have to turn aroun',
Take the elevator down,
And go live out in the stable with the 'Vet'.

BIENNIAL FINANCIAL STATEMENT

From June 30, 1901, to June 30, 1903.

Name.	Location.	No. Days.	Per Diem.	Expense.	Total.
H. E. Talbot	Des Moines	65	\$ 325.00	\$ 350.44	\$ 675.44
J. H. McLeod	Charles City	8	44.00	32.99	76.99
W. B. Niles	Sidney	9	45.00	24.55	69.55
J. R. Sanders	Corydon	10	53.00	34.01	87.01
F. J. Neiman	Marshalltown	6	30.00	18.08	48.08
S. H. Kingery	Creston	10	50.00	22.86	72.86
H. C. Simpson	Denison	67	365.00	194.79	559.79
G. S. Kerr	Washington	1	5.00	2.00	7.00
D. H. Miller	Harlan	8	15.00	8.66	23.66
S. K. Hazlet	Oelwein	34	170.00	70.81	240.81
S. H. Johnston	Carroll	23	140.00	61.71	201.71
J. W. Griffith	Cedar Rapids	20	100.00	71.73	171.73
C. E. Stewart	Chariton	12	60.00	49.02	109.02
E. G. Piper	Ida Grove	3	15.00	8.44	23.44
Peter Malcom	New Hampton	7	35.00	13.73	53.73
Aug. Lames	Dysart	7	35.00	25.05	60.05
J. J. Repp	Ames	46	230.00	164.71	394.71
D. E. Baughman	Fort Dodge	13	65.00	57.51	122.51
W. L. Evers	Iowa Falls	21	105.00	53.74	158.74
J. D. Inger	Waverly	17	85.00	47.01	132.01
J. I. Gibson	Denison	285	1,425.00	1,178.23	2,603.23
G. A. Johnson	Sioux City	8	15.00	1.50	16.50
J. G. Parlow	Shenandoah	11	55.00	37.99	92.99
L. U. Shipley	Sheldon	14	70.00	40.19	110.19
J. E. Brown	Oakloosa	13	65.00	43.77	107.77
W. H. Austin	Spirit Lake	9	45.00	44.75	89.75
J. W. Scott	Manchester	20	100.00	92.86	192.86
F. H. Edwards	Iowa City	4	20.00	11.55	31.55
H. T. Shipley	Sheldon	6	30.00	20.91	50.91
R. R. Hammond	LeMars	4	20.00	25.83	45.83
P. O. Koto	Forest City	328	1,640.00	1,768.36	3,408.36
Total		1,044	\$5,420.00	\$4,587.89	\$10,007.89

RULES AND REGULATIONS.

OFFICE OF THE IOWA STATE BOARD OF HEALTH,
DES MOINES, IOWA, January, 19, 1898.

Pursuant to authority vested by chapter 14, Title XII, of the Code, section 2530, the State veterinary surgeon by and with the approval of the State Board of Health and the Executive Council, does hereby make and establish the following rules and regulations for the prevention and restriction of contagious diseases among domestic animals:

RULE 1. All cattle brought within this State, from any county or parish within the United States where pleuro-pneumonia is known to exist, shall be subject to quarantine for a period of not less than sixty days.

RULE 2. No person owning or having the care or custody of any animal affected with glanders or farcy, or which there is reason to believe is affected with said disease, shall lead, drive, or permit such animal to go on or over any public grounds, uninclosed lands, street, road, public highway, lane, or alley; or permit it to drink at any public water trough, pail, or spring; or keep such diseased animal in any inclosure, in or from which such diseased animal may come in contact with, or close proximity to, any animal not affected with such disease.

RULE 3. Whenever notice is given to the trustees of a township, or to a local board of health, of animals suspected of being affected with glanders or farcy, said trustees shall immediately require such suspected animals to be isolated and kept separate and apart from all other animals until released by order of the State veterinary surgeon or some person acting by his authority.

RULE 4. An animal must be considered as "suspected" when it has stood in a stable with, or been in contact with, an animal known to have the glanders; or if placed in a stable, yard, or other inclosure where a glandered animal has been kept.

RULE 5. Whenever any animal affected with anthrax, glanders, or farcy shall die, or shall be killed, the body of such animal shall be immediately burned, or shall have kerosene poured over it and buried not less than four feet deep without removal of the hide or any part of the carcass.

(Reasons for Rule 5.—To prevent the possibility of a recurrence of these diseases from germs existing in the grave which, if not destroyed by some powerful agent, will retain their vitality for a number of years, so as to impart the disease. As they are communicable by inoculation to human beings, great precaution should be used in handling animals affected with this disease.)

RULE 6. No animal diseased with glanders or farcy shall be deemed to have any property value whatever, and no appraisal thereof will be made.

(Reason for Rule 6.—Glanders is an incurable disease, and there is no warrant for expending public money in appraising property manifestly worthless, and which can be compensated for only at "its actual value in its condition when condemned;" also to prevent the introduction of diseased animals into the State, and the inoculation of worthless ones for speculative purposes.)

RULE 7. Whenever the owner, or person having in charge any animal declared by the State veterinary surgeon or other authorized person to have the glanders, shall neglect or refuse to destroy said animal, the premises whereon such animal is kept shall be quarantined until such animal is destroyed and the premises thoroughly disinfected.

QUARANTINE.

RULE 8. The term "quarantine" shall be construed to mean the perfect isolation of all diseased or suspected animals from contact with healthy animals, as well as the exclusion of such healthy animals from the yards, stables, enclosures, or grounds wherever said suspected or diseased animals are, or have been kept.

RULE 9. So-called "piggy" or pregnant sows and rejected cattle found in railway or packing-house stock yards must not be sold nor delivered to farmers, but held subject to such quarantine as may be deemed necessary to prevent the communication of any contagious disease.

RULE 10. All hogs presented for the Iowa State fair and Sioux City fair shall be subject to examination by the State veterinary surgeon before entering the fair grounds, and to daily inspection during the exhibition. Should any animal be found diseased with hog cholera or swine plague, it must be immediately removed to a place of quarantine. The show-pen must be cleansed and disinfected under the supervision of the State veterinary surgeon before and during the fair.

RULE 11. In suspected cases of glanders and farcy, when the symptoms do not warrant the State veterinarian in condemning the animal, the mallein test shall be recognized as a valuable diagnostic.

RULE 12. In suspected cases of bovine tuberculosis the tuberculin test shall be recognized as a valuable diagnostic.

DISINFECTION.

Among the most efficient and convenient agents for destroying disease germs are heat, solutions of creolin, carbolic acid, sulphate of iron, caustic soda, or sulphate of copper, fumes of chlorine, chloride of lime, slakedlime, lime water, whitewash, and kerosene oil.

Heat.—This is conveniently applied by means of boiling water or oil, and is especially recommended for disinfecting fabrics of all kinds, leather, or wood. Articles of iron or other metals may be purified by heating in a fire. All bedding, litter, excrement, etc., that have accumulated about animals affected with any form of contagious disease, and the carcasses, together with all blood or other fluid elements that have escaped from such carcasses and contaminated soil, should be burned, as surest means of eradicating disease.

Dirt or earth floors of stables, wherein animals affected with glanders or anthrax have been kept, should be removed to the depth of four inches and burned.

SOLUTIONS.

Creolin.—One to fifty or one hundred parts.

Carbolic acid.—Add one part of the acid to five or ten parts of water or oil.

Sulphate of iron, copper, and caustic soda.—Add as much of the substance to a given quantity of warm water as will be dissolved.

Whitewash.—For disinfecting interior walls of buildings, feed-boxes, mangers, yards, fences, etc., the application of a coating of whitewash prepared from lime in the ordinary way, so thoroughly done as to completely cover every part of the surface designed to be cleansed, is an economical method.

FUMIGANTS.

Chloride of lime.—Chloride of lime and slaked lime for disinfecting floors, yards, carcasses, and grounds where dead or diseased animals have lain, in fine powder, shall be scattered over the surface of objects to be disinfected thickly, so as to form a complete covering.

Chlorine.—To generate, take peroxide of manganese (to be obtained at any drug store), place in an earthen dish, and add one pound of hydrochloric acid (sometimes called muriatic acid) to each four ounces of the peroxide of manganese. Care should be taken not to inhale the gas.

After the floors, walls, etc., of a contaminated building have been cleansed, they should be fumigated by some of the foregoing agents. The doors should be closed and the building otherwise made as tight as possible. Fumes should then be evolved in the building for not less than half a day, and the doors kept closed not less than twenty-four hours, when air and sunlight should be freely admitted.

BURIALS.

Kerosene oil.—Carcasses buried in the earth where there is danger of infection by exhumation by other animals should, previous to burial, be thoroughly covered with quick-lime, or saturated with kerosene oil. This will tend to destroy the virus, and will prevent carnivorous animals disturbing the carcass and thereby spreading the disease.

Freezing.—It has been demonstrated repeatedly, in Iowa, that the frosts of winter thoroughly disinfect pasture lands that have been poisoned with the virus of Texas fever by herds of southern cattle during the summer months. From the first of April to the first of November the virus is likely to retain its vitality, and the strictest precaution is necessary to prevent communication of the disease to Northern cattle. The purifying effect of frost, however, cannot be relied upon for destroying the virus of any other disease than Texas fever, liable to attack live stock in Iowa.

It is for the interest of every community, on the appearance of contagious or infectious disease among animals, to adopt speedy measures to eradicate the same, and to co-operate with the State veterinary surgeon in securing such result in the shortest time possible.

J. I. GIBSON,
State Veterinary Surgeon.

Approved January 19, 1898.

J. F. KENNEDY,
Secretary State Board of Health.

J. I. GIBSON,
President State Board of Health.

L. M. SHAW,
G. L. DOBSON,
C. G. MCCARTHY,
JOHN HERRIOT,
Executive Council.

THE STATUTES.

CHAPTER 14, TITLE 12, CODE.

OF THE STATE VETERINARY SURGEON.

SECTION 2529. The State veterinary surgeon shall be appointed by the Governor, subject to removal by him for cause, who shall hold office for three years. He shall be a graduate of some regularly established veterinary college, skilled in that science, and shall be by virtue of his office a member of the State Board of Health.

SEC. 2530. He shall have supervision of all contagious and infectious diseases among domestic animals in, or being driven or transported through the State, and is empowered to establish quarantine against animals thus diseased or that have been exposed to others thus diseased, whether within or without the State, and with the concurrence of the State Board of Health may make such rules and regulations as he may regard necessary for the prevention and suppression, and against the spread of said disease, or diseases, which rules and regulations, the Executive Council concurring, shall be published and enforced, and in the performance of his duties he may call for the assistance of any police officer.

SEC. 2531. Any person who wilfully hinders, obstructs, or resists said veterinary surgeon, his assistants, or any peace officer acting under him or them, when engaged in the duties or exercising the powers herein conferred, or violates any quarantine established by him or them, shall be guilty of a misdemeanor.

SEC. 2532. Said surgeon shall biennially make a full and detailed report of his doings since his last report to the Governor, including his compensation and expenses, which report shall not exceed one hundred and fifty pages of printed matter.

SEC. 2533. Whenever a majority of any board of supervisors or township trustees or any city or town council, whether in session or not, shall in writing notify the Governor of the prevalence of, or probable danger from, any of said diseases, he shall notify the veterinary surgeon, who shall at once repair to the place designated in said notice and take such action as the exigencies may demand, and the Governor may, in case of emergency, appoint a substitute or assistants with like qualifications and with equal powers and compensation.

SEC. 2534. Whenever in the opinion of the State veterinary surgeon the public safety demands the destruction of any stock, the same may be destroyed upon the written order of such surgeon, with the consent of the owner, or upon approval of the Governor, and by virtue of such order such surgeon, his deputy or assistant, or any peace officer may destroy such diseased stock, and the owner thereof shall be entitled to receive its actual value in its condition when condemned, to be ascertained and fixed by the State veterinary surgeon and the nearest justice of the peace, who, if unable to agree, shall call upon the nearest or other justice of the peace upon

whom they agree as umpire, and their judgment shall be final when the value of the stock, if not diseased, would not exceed twenty-five dollars; but in all other cases either party shall have the right of appeal to the court; but such appeal shall not delay the destruction of the diseased animals. The veterinary surgeon shall at once file with the governor his written report thereof, who shall, if found correct, indorse his finding thereon, whereupon the auditor of State shall issue his warrant therefor upon the treasurer of State, who shall pay the same out of any moneys at his disposal under the provisions of this act; but no compensation shall be allowed for stock destroyed while in transit through or across the State, and the word "stock" as herein used, shall be held to mean cattle, horses, mules and asses.

SEC. 2535. The governor, with the veterinary surgeon, may co-operate with the government of the United States for the objects of this chapter, and the governor may accept and receipt for any moneys receivable by the State under the provisions of any act of congress which may at any time be in force upon this subject and pay the same into the State treasury, to be used according to the act of congress and the provisions of this chapter as nearly as may be.

SEC. 2536. There is annually appropriated out of moneys, not otherwise appropriated, the sum of three thousand dollars or so much thereof as may be necessary for the uses and purposes herein set forth.

SEC. 2537. Any person, except the veterinary surgeon, called upon under the provisions of this chapter, shall be allowed and receive two dollars per day while actually employed.

SEC. 2538. When engaged in the discharge of his duties the veterinary surgeon shall receive the sum of five dollars per day and his actual expenses, the claim therefor to be itemized, verified, accompanied with written vouchers, and filed with the State auditor, who shall allow the same and draw his warrant upon the treasury therefor.

CHAPTER II, TITLE XXIV, CODE.

DISEASED ANIMALS.

SECTION 5012. If the owner of sheep or any person having the same in charge, knowingly import or drive into this State sheep having any contagious disease; or knowingly turn out or suffer any sheep having any contagious disease to run at large upon any common, road, or uninclosed lands; or sell or dispose of any sheep, knowing the same to be so diseased; he shall be fined in any sum not less than fifty nor more than one hundred dollars.

SEC. 5013. If any person knowingly import or bring within the State any horse, mule or ass, affected by the disease known as nasal gleet, glanders, or button-farcy, or suffer the same to run at large upon any common, road, or uninclosed land, or use or tie the same in any public place, or off his own premises, or sell, trade, or offer for sale or trade any such

animal, knowing the same to be so diseased, he shall be fined not less than fifty dollars nor more than five hundred dollars, or be imprisoned not to exceed one year in the county jail, or both.

SEC. 5014. If any horse, mule, or ass, reasonably supposed to be diseased with nasal gleet, glanders, or button-farcy, be found running at large without any known owner, it shall be lawful for the finder thereof to take such animal so found, before some justice of the peace, who shall forthwith cause the same to be examined by some veterinary surgeon, or other person skilled in such diseases, and if, on examination, it is ascertained to be so diseased, it shall be lawful for such justice of the peace to order such diseased animal to be immediately destroyed and buried, and the necessary expense accruing under the provisions of this section shall be defrayed out of the county treasury.

SEC. 5015. The owner or person having charge of any swine, any of which die or are killed on account of any disease, shall, upon such fact coming to his knowledge, immediately burn the same.

SEC. 5016. No person shall sell or give away or offer for sale any swine that have died of any disease, or that have been killed on account of any disease.

SEC. 5017. No person shall convey upon or along any public highway or other public ground, or any private land except that owned or leased by him, any diseased swine, or swine that have died of, or have been killed on account of, any disease. Upon the trial for the violations of the provisions of this section, the proof that any person has hauled, or is hauling, dead swine from a neighborhood in which swine have been dying, or at the time dying, from any disease, shall be presumptive evidence of his guilt.

SEC. 5018. It shall be unlawful for any person negligently or wilfully to allow his hogs or those under his control, infested with any disease, to escape his control or run at large.

SEC. 5019. Any person violating or failing to comply with any provision of the four preceding sections shall be fined not less than five dollars nor more than one hundred dollars, or be imprisoned in the county jail not to exceed thirty days or both.

SEC. 5020. Any person driving any cattle into this State, or any agent, servant, or employe of any railroad or other corporation, who shall carry, transport or ship any cattle into this State, or any railroad company or other corporation, or persons who shall carry, ship, or deliver any cattle into this State, or the owner, controller, lessee, or agent, or employe of any stockyard, receiving into such stockyard, or in any other inclosure for the detention of cattle in transit or shipment, or reshipment, or sale, any cattle brought or shipped, in any manner into this State, which, at the time they were either driven, brought, shipped, or transported into this State, were in such condition as to infect with or communicate to other cattle pleuro-pneumonia, or splenic, or Texas fever, shall be fined not less than three hundred dollars and not more than one thousand dollars, or be imprisoned in the county jail not exceeding six months, or both.

SEC. 5021. Any person who shall be injured or damaged by any acts prohibited in the preceding section, in addition to the remedy therein provided, may recover the actual damages sustained by him, from the person,

agent, employe, or corporation therein mentioned, and neither said criminal proceeding nor said civil action shall be a bar to a conviction or to a recovery in the other.

TITLE XII, CHAPTER 3.

* DISEASED SHEEP.

SECTION 2343. The board of supervisors of any county, when notified in writing by five or more sheep owners of such county, that sheep diseased, with scab or any other malignant, contagious disease, exist in such county, shall, at any regular or special meeting, appoint a suitable person as county sheep inspector, who shall take the oath of office, whose duties shall be as hereinafter prescribed, and whose term of office shall be for two years and until his successor is appointed and qualified.

SEC. 2344. It shall be the duty of the sheep inspector upon the complaint of three or more sheep owners that any sheep within his jurisdiction have the scab or any other malignant, contagious disease, to immediately inspect and report in writing the result of his inspection to the county auditor, to be filed by him for reference by the board of supervisors or any party concerned. And, if he deem it necessary in order to prevent the spread of the disease to the sheep of the other owners, he shall command the owner or agent to dip or otherwise treat such diseased sheep, and shall inspect such diseased sheep every month thereafter until such disease shall be eradicated.

SEC. 2345. It shall be the duty of the sheep inspector to dip or otherwise treat such diseased sheep should the owner or agent refuse to do so, and all costs, expenses, and charges, together with a per diem of three dollars per day, shall be charged against the owner of such sheep, and shall be a lien thereon, and may be recovered in an action.

SEC. 2346. Such compensation for the inspector shall be three dollars per day, and shall be paid by the owner of the sheep, or his agent, if the disease is found to exist. In case no disease is found to exist the complainants shall pay such fee.

SEC. 2347. Upon the arrival of any flock of sheep within the State from a distance of more than twenty miles outside the boundaries of the State, the owner or agent shall notify the inspector of the county in which such sheep are being held, and he shall inspect the flock at the expense of the owner or agent; and if the sheep are found sound shall furnish the owner or agent a certificate which shall be a passport to any part of the State; but sheep in transport on board of railroad cars, or passing through the State on such cars, shall not come within the provisions of this section. Any violation of, or failure to comply with, the provisions of this and the four preceding sections, by the owner of any sheep, shall subject him to forfeiture of not to exceed one hundred dollars which shall be a lien on such sheep, and shall be recovered in an action by the county attorney in the name and for the use of the county.

SEC. 4979. If any person throw, or cause to be thrown, any dead animal into any, river, well, spring, cistern, reservoir, stream or pond, he shall be imprisoned in the county jail not less than ten nor more than thirty days, or be fined not less than five nor more than one hundred dollars.

SEC. 4981. If any person knowingly sell any kind of diseased, corrupted, or unwholesome provisions, whether for meat or drink, without making the same fully known to the buyer, he shall be imprisoned in the county jail not more than thirty days, or be fined not exceeding one hundred dollars.

The flesh of pregnant animals must not be sold nor used for human food after the seventh month of pregnancy for cows, and the tenth week for sows.—Regulations of the State Board of Health.

CHAPTER XCIII.

PRACTICE OF VETERINARY MEDICINE, SURGERY, AND DENTISTRY.

An act to regulate the practice of veterinary medicine, surgery, and dentistry in the State of Iowa, and to provide penalties for a violation thereof. (Additional to Title XII of the Code, relating to the policy of the State.)

Be it enacted by the General Assembly of the State of Iowa:

SECTION 1. *Unlawful practice.* That it shall be unlawful for any person to practice veterinary medicine, surgery, or dentistry, in this State, who shall not have complied with the provisions of this act.

SEC. 2. *Existing practitioners—Certificates of registration.* Any person who has practiced the profession of veterinary medicine, surgery, or dentistry in this State for a period of five years immediately preceding the passage of this act may be deemed eligible to registration as an existing practitioner and receive a certificate of registration upon presentation to the secretary of the board of veterinary medical examiners, which shall be hereafter constituted, his sworn affidavit and letters of recommendation from ten reputable freeholders and stock owners in his locality, all such applications to be made on or before January 1, 1900.

SEC. 3. *Graduates.* Any person who is a graduate of a legally chartered and authorized veterinary college or veterinary department of any university or agricultural college at the time of the passage of this act, or who shall hold a diploma from such institution prior to 1901, shall be entitled to registration as an existing practitioner upon the presentation of his diploma, duly verified.

SEC. 4. *State Board of Veterinary Medical Examiners—term—vacancies.* The Governor of the State shall appoint a board of examiners within sixty days after the passage of this act; said board to be known as the State Board of Veterinary Medical Examiners. This board shall consist of three

qualified veterinarians, residents of the State, each of whom shall be a graduate of a legally chartered and authorized veterinary college or veterinary department of any university or agricultural college, and who shall be of good standing in the profession; one of these members shall be appointed for one year; one for two years; and each succeeding appointment shall be for three years. Each shall hold office until his successor is duly appointed and qualified. No member of any veterinary college or veterinary department of the State University or Agricultural College, or any person connected therewith, shall be eligible to appointment on said board. The Governor shall fill any vacancy which shall occur on the board, and may remove any member of said board for continued neglect of duty, for incompetency, unprofessional or dishonorable conduct.

SEC. 5. *Powers of board.* This board shall have power to make all needed regulations for its government and proper discharge of its duties in accordance with this act, and shall have power to administer oaths, and take testimony, concerning all matters within its jurisdiction.

SEC. 6. *Meetings.* The meetings of the examining board shall be held at least once a year, or at such times and places as it may elect. At any meeting of the board, a majority shall constitute a quorum to transact business, or to conduct examinations.

SEC. 7. *Certificate of qualification.* Said board shall receive applications for registrations, according to sections two and three of this act, and shall issue a certificate of qualification to all applicants who conform to the requirements for such registration, signed by the members of the board, provided that the certificate thus granted specifically and plainly states whether or not the one to whom it was granted is a graduate or non-graduate in veterinary medicine. Such certificate shall be conclusive as to the rights of the lawful holder of the same to practice veterinary medicine, surgery, or dentistry in this State.

SEC. 8. *Registration fee.* The fee for registration shall be five dollars (\$5), payable in advance to the secretary of the board.

SEC. 9. *Qualifications—examination—fee—license.* From and after January 1, 1901, any person not authorized to practice veterinary medicine, surgery, and dentistry in this State, and desiring to enter upon such practice, shall be a graduate of a legally chartered and recognized veterinary college or veterinary department of a university or agricultural college, and shall pass the examination required by said State Board of Veterinary Medical Examiners. The fee for such examination shall be fifteen dollars (\$15) payable in advance to the secretary of the board. The applicant shall be at least twenty-one years of age and of good moral character. Any person conforming to these requirements, and eligible to practice under section 2 hereof, shall receive a license to practice veterinary medicine, surgery, or dentistry within this State, signed by the members of the board, which license shall be recorded in the office of the recorder of the county in which said person resides, the recording fee to be paid by holder of certificate.

SEC. 10. *Register—treasurer to hold fees—bond vouchers.* The board shall keep a register of all registered practitioners in the State, setting forth such facts as the board shall see fit. All fees accruing under this act shall be held by the treasurer of the board, who shall execute good and suf-

ficient bond to said board to faithfully discharge his duties, and who shall pay out such funds only on vouchers, certified by a majority of said board.

SEC. 11. *Compensation—expenses.* Each member of said board shall be entitled to receive five dollars (\$5) per diem, also actual and necessary traveling expenses, incurred while actually engaged in the discharge of his official duties, provided such compensation and expenses do not exceed said income of fees accruing under this act.

SEC. 12. *Penalty.* Any person violating any of the provisions of this act shall be guilty of a misdemeanor and upon conviction shall be punished by a fine of not less than twenty-five dollars nor more than one hundred dollars, or by imprisonment in the county jail for a period of not more than thirty days, for each and every such offense. It shall be the duty of the county attorney of the county in which violation occurs to conduct all proceedings against violators of this act.

SEC. 13. *Exceptions.* Nothing in this act shall be construed to apply to commissioned veterinarians in the United States army or to persons who dehorn cattle, or castrate domestic animals, or to persons who gratuitously treat diseased animals.

SEC. 14. *Further penalty.* Any person who shall, without having been authorized to do so legally, append any veterinary title to his name, or shall assume or advertise any veterinary title in such manner as to convey the impression that he is a lawful practitioner of veterinary medicine or any of its branches, shall be guilty of a misdemeanor, and punished according to the provisions of section twelve (12) of this act.

SEC. 15. *Re-examination.* In case the examination of any person shall prove unsatisfactory and his name be not registered, he shall be permitted to present himself for re-examination within any period not exceeding twelve months next thereafter, and no charges shall be made for re-examination.

SEC. 16. *Board to render an account to Executive Council.* The board shall render under oath annually on January first to the Executive Council an account of all fees collected and per diem expenses paid, and pay over the balance into the State treasury.

Approved May 5, 1900.

SEC. 2538-b. *Repeal—existing practitioners—registration.* Section two (2) of chapter ninety-three (93) of the acts of the Twenty-eighth General Assembly is hereby repealed and the following enacted in lieu thereof:

Any person of good moral character who has practiced the profession of veterinary medicine, surgery and dentistry in this State for a period of five years immediately preceding the passage of the act of which this is an amendment shall be deemed eligible to registration as an existing practitioner upon presenting to the board of veterinary medical examiners, created by the act of which this is an amendment, satisfactory evidence that such person is of good moral character and that such person had actually practiced veterinary medicine, surgery and dentistry in the State of Iowa for a period of five years immediately preceding the passage of the act of which this is an amendment, application for such registration to be made before July 4, 1902. [29 G. A., ch. 170, § 1.]

SEC. 2. *Graduates.* Section three (3) of chapter ninety-three (93) of the acts of the Twenty-eighth General Assembly is hereby amended by adding

after the word "verified" at the end of the last line of said section, the following, "all applications for such registration to be made before July 4, 1902."

SEC. 3. *Revocation of certificate.* Section five (5) of chapter ninety-three (93) of the acts of the Twenty-eighth General Assembly is hereby amended by adding after the word "jurisdiction" at the end of the last line of said section the following:

"It shall also have the power to revoke any certificate issued by it when it is shown that such certificate was procured by false representation or where good cause for revocation of such certificate has arisen since the issuance thereof."

SEC. 4. *Qualifications—license.* Section nine (9) of chapter ninety-three (93) of the acts of the Twenty-eighth General Assembly is hereby amended by striking out after the words "to these requirements" in line ten, the following words in lines ten and eleven: "and eligible to practice under section two hereof."

SEC. 5. *In effect.* This act, being deemed of immediate importance, shall be in full force and effect on and after its publication in the Iowa State Register and Des Moines Leader, newspapers published in the city of Des Moines.

Approved April 4, 1902.

I hereby certify that the foregoing act was published in the Iowa State Register and Des Moines Leader, April 5, 1902.

W. B. MARTIN,
Secretary of State.

RULES AND STANDING
COMMITTEES

OF THE

Thirtieth General Assembly

1904

PRINTED BY ORDER OF THE GENERAL ASSEMBLY

DES MOINES
BERNARD MURPHY, STATE PRINTER
1904

SENATE RULES.

REGULAR ORDER OF DAILY BUSINESS.

The following order shall govern.

1. Presentation of petitions or memorials, addressed to the Senate or the General Assembly.
2. Introduction of bills.
3. Resolutions.
4. Communications on the President's table including House messages.
5. Reports of standing committees, in the order in which they stand in the rules, except the committee on Engrossed and Enrolled Bills, Rules and Printing.
6. Reports of select committees.
7. Third reading of bills.
8. Unfinished business before the Senate.
9. Bills and other matters.
10. General order of the day.

STANDING RULES.

1. The President shall take the Chair at the hour to which the Senate is adjourned, and call the Senate to order; and if a quorum be present, he shall proceed with the regular order of daily business, unless otherwise ordered by the Senate, or unless a special order for the day shall interfere therewith. He shall preserve order and decorum, and decide all questions of order, subject to an appeal to the Senate. He shall appoint all committees, unless otherwise especially ordered. Immediately preceding the adjournment of each morning session; or, in case it cannot be done during that session, then as soon after the convening of the next following session as he may find most convenient, the President shall call for corrections of the Journal

of the last day's proceedings. He shall then cause any mistakes therein to be corrected by the Secretary, and the Journal shall then be approved.

2. The Senate shall, at its pleasure, elect a President pro tem. who shall hold his office during the remaining portion of the time for which the President was elected; and when the President shall from any cause be absent, the President pro tem. shall preside, except when the Chair is filled by appointment by the President.

3. There shall be appointed by the Lieutenant Governor, at each session of the Senate, to hold their positions during such session, but subject to be discharged by the President of the Senate for inefficiency or misbehavior, or other reasons in his judgment justifying such discharge, six messengers for the Senate. And the President may appoint other messengers in the place of any discharged.

4. One fourth of the members may have a call of the Senate, and absent members sent for, and their attendance enforced.

5. When a member is about to speak in debate, or deliver any matter to the Senate, he shall rise from his seat and respectfully address himself to "Mr. President," and shall confine himself to the question under debate, avoid personalities, and the imputation of improper motives.

6. When the vote is taken viva voce, questions shall be distinctly put in this form, viz: "As many as are of the opinion (as the case may be) say 'aye.'" And after the affirmative voice is expressed: "As many as are of the contrary opinion say 'no.'" If the President doubt, or a division be called for, the Senate shall divide—those in the affirmative of the question shall first rise from their seats, and afterwards those in the negative.

7. Every member present when a question is put shall vote, unless he shall, for special cause, be excused by a vote of the Senate; but no member shall vote on any question in the event of which he is directly and personally interested, or, except by consent of the Senate in any case where he was not present when his name was called in the taking of the vote. Provided, that any member who was absent by leave of the Senate may vote at any time before the result is announced.

8. All motions (except to adjourn, postpone, or commit,) shall be reduced to writing, if required by any member of the Senate. Any motion or resolution may be withdrawn by the mover, provided, the same has not been amended by the Senate, and that no amendment is pending thereto.

9. When a question is under debate no motion shall be received but to adjourn, to lay on the table, for the previous question, to postpone to a day certain, to commit or amend, to postpone indefinitely, which several motions shall have precedence in the order in which they are named; and no motion to postpone to a day certain, to commit or postpone indefinitely, being decided, shall be again allowed on the same day, and at the same stage of the bill or proposition. A motion to strike out the enacting clause of a bill shall have the precedence of a motion to amend; and, if carried, shall be considered equivalent to the rejection of the bill.

10. A motion to adjourn, to lay on the table, and for the previous question, shall be decided without debate, and all incidental questions of order rising after a motion is made for the previous question, and pending such motion, shall be decided—whether an appeal or otherwise—without debate.

11. The previous question shall be in this form: "Shall the main question be now put?" It shall only be admitted when demanded by a majority of the members present, and its effect shall be to put an end to all debate, and bring the Senate to a direct vote upon pending amendments and then upon the main question unless otherwise indicated by the motion and ordered by the Senate, except that the member in charge of the measure under consideration shall have ten minutes in which to close the discussion, immediately before the vote is taken upon the main question. If the previous question is decided in the negative, the Senate shall proceed with the matter before it, the same as though the previous question had not been moved.

12. Any member may call for a division of a question, which shall be divided, if it comprehends propositions in substance so distinct that one being taken away substantive propositions shall remain for the decision of the Senate. A motion to strike out and insert shall be deemed indivisible; but a motion to strike out being lost, shall preclude neither amendments to the matter attempted to be stricken out, nor a motion to strike out and insert.

13. When a motion or question has been decided, any member having voted on the prevailing side, may move a reconsideration, on the same or next legislative day.

14. A motion to print any paper presented to the Senate may, on motion, be referred to the Committee on Printing, whose duty

it shall be to report at the earliest time practicable, on the propriety of printing.

15. Every bill shall be introduced on the report of a committee, or by leave, and shall at once be given its first reading. Every bill and joint resolution shall have received three several readings previous to its passage; but no bill or joint resolution shall have its second and third readings on the same day, without a suspension of this rule; and every bill and joint resolution shall express in its title the object thereof. All rules of the Senate applicable to bills shall apply with equal force to joint resolutions. Each bill and proposed joint resolution, when introduced, shall be accompanied by a copy thereof, which shall be delivered, instead of the original, to the State Printer by the Secretary of the Senate.

16. Before the same is presented, there shall be endorsed on each petition a brief statement of the subject matter thereof, and on each bill and joint resolution the title thereof, and in either case the name of the Senator presenting the same. In presenting a petition, the Senator shall briefly state from his place in the Senate Chamber the subject matter to which the petition relates.

17. The first reading of a bill or joint resolution shall be for information, and, if objection be made to it, the question shall be, "Shall the bill (or joint resolution, as the case may be) be rejected?" If no objection be made, or the question to reject be lost, the bill or joint resolution shall go to its second reading without further questioning.

18. Upon the second reading of a bill or joint resolution, the President shall state it as ready for commitment, amendment or engrossment, and if committed, then the question shall be, whether to a select or standing committee, or a committee of the whole. If to a committee of the whole, the Senate shall determine on what day. If no objection is made, the President of the Senate may refer the bill or joint resolution to an appropriate committee or to such committee as the Senator who introduces the measure shall suggest. But if the bill or joint resolution be ordered to be engrossed, it shall be in order for its third reading any session after that day. No bill or joint resolution shall be committed or amended until it shall have been twice read.

19. (a) All bills carrying appropriations shall be referred to the Committee on Appropriations, which the Committee shall report back to the Senate not later than the first Monday after

March 15. After the third legislative day prior to said Monday, House bills shall be reported back by said Committee within three days from the reference thereof.

(b) No bill carrying an appropriation shall be introduced after March 15 except by the Committee on Appropriations.

(c) On or before the first Monday after March 15, the Committee on Appropriations shall prepare an itemized schedule of all appropriations recommended by the Committee on Appropriations and have the same printed and laid upon the desks of members and no appropriation bill shall be taken up for consideration and passage until the third legislative day thereafter.

(d) All appropriation bills after being reported by the Committee on Appropriations shall first be considered by the Senate as in Committee of the Whole, President of the Senate presiding, after which they shall be reported to the Senate; and any amendments made in Committee of the Whole shall again be considered by the Senate after which further amendments may be proposed. While thus in Committee of the Whole, heads of departments for institutions and members of any board or commission or subordinates of the same may be summoned to appear and give information relative to their appropriations.

20. When a question is lost on engrossing a bill, or joint resolution for a third reading on a particular day, it shall not preclude a question to engross it for a third reading on a different day. After a third reading of a bill or joint resolution, no amendment (except to fill blanks) shall be received, except by unanimous consent of the members present; and the vote on its final passage shall be immediately taken without debate.

21. A bill or joint resolution may be committed at any time previous to its third reading.

22. In filling blanks, the largest sum and longest time shall be first put.

23. On the return of a bill or joint resolution from the House, with an amendment, it shall be placed with the third reading of bills, unless the Senate shall otherwise order. On the question of adopting the amendment the vote shall be taken on the final passage of the bill, and if the amendment be adopted by a constitutional majority, no further vote is necessary.

24. All bills and joint resolutions introduced, except local or legalizing bills, shall be printed, unless otherwise ordered by the Senate, and committees may order to be printed any bills

under consideration by them, and any substitutes for bills or resolutions reported by them.

25. It shall be in order for the Committee on Engrossed and Enrolled Bills, on Rules and on Printing, to report at any time, when no member is addressing the Senate.

26. When any special order of the day is not proceeded with on the day assigned, it shall stand as a general order on each succeeding day until disposed of, unless otherwise ordered, but its consideration cannot be moved until that order of business is reached, when it shall be taken up in order of its file, and shall be taken up in the order of precedence.

27. When the pending question is interrupted by a "Special Order," it shall, upon the disposal of the special order, be before the Senate in the same stage as if it had not been so interrupted.

28. Committees are permitted to employ clerks by the majority vote of the whole committee. The clerk shall be selected by such vote, and in like manner may be discharged for inefficiency, or when the services of the clerk become unnecessary.

29. Clerks of Senate committees, when not engaged in duties pertaining to such committees, or work assigned them by the committee chairman, shall be subject to the discretion of the Secretary of the Senate, for any labor connected with the duties of his position or his assistants. The Secretary shall, from time to time, make detail from said clerks to assist in preparing copy or correcting proof for the daily Journal.

30. All reports of committees on bills or resolutions shall be made in duplicate and be accompanied with the original bill or resolution to which the report relates: Providing that this rule shall not apply to the reports of Committees on Enrolled and Engrossed Bills.

31. When a vote is taken in any committee upon any bill or resolution before it, or any motion relating to the merits thereof, the chairman shall see that no person is present except the members and clerk of said committee, unless otherwise ordered by the committee.

32. Smoking in the Senate Chamber is hereby prohibited while the Senate is in session. And any officer or employee who shall indulge in smoking while on duty in the Senate Chamber or doorways leading thereto, shall thereby subject himself to liability of discharge.

33. Admission to the floor of the Senate Chamber shall be granted by the Doorkeeper to the Governor and his private sec-

retary, members of the House of Representatives, the state officers and their deputies, judges of the several courts, ex-members of the Legislature, ex-state officers and the regular reporters of the Senate and clerks of committees. No persons, except those herein specified, shall be admitted, except upon special permission of the President of the Senate, or of a member of the Senate. And no person shall be permitted by members or otherwise to come upon the floor of the Senate or into the cloak rooms to solicit or influence Senators in their official action, or to sell any article or to solicit subscriptions. No officer, or employee elected or appointed by the Senate or any of its committees, shall solicit or endeavor to influence members of the Legislature, in their official action. Any person violating this rule shall be summarily dismissed by the Senate.

34. In case of disturbance or disorderly conduct in the lobby or gallery, the presiding officer shall have the power to order the same cleared.

35. Before acting on executive business, the Senate Chamber shall be cleared, by direction of the President, of all persons except members, the Secretary, the Sergeant-at-Arms, members enjoined and the Secretary and Sergeant-at-Arms sworn, to observe secrecy.

36. When an adjournment has been ordered by a vote of the Senate, and before adjournment is declared by the President of the Senate, it shall be in order for the chairmen of the several committees to announce in open Senate the time and place of meeting of their respective committees.

37. No standing rule or order of the Senate shall be rescinded or suspended, nor shall any matter, tabled upon motion, be taken up, unless by a vote of two thirds of the members present, except an order fixing the hour to which the Senate shall stand adjourned.

38. Resolutions, including concurrent resolutions, shall not be acted upon by the Senate upon the day the same are introduced or received by the Senate, but shall lie upon the table for one legislative day if any member object to the immediate consideration thereof. But if no member object, the same may have immediate consideration. Nothing in this rule shall abridge or prevent the usual right of reference to committee.

39. The rules of parliamentary practice comprised in Cushing's Manual shall govern the Senate in all cases to which they are applicable, and in which they are not inconsistent with the

standing rules or orders of the Senate, and joint rules of the Senate and House of Representatives.

40. The duties of the officers and employees of the Senate are as stated in the paragraphs relating thereto, and appended to these rules.

The Secretary of the Senate shall have charge of the Secretary's desk, and shall see that no one is permitted therein except himself and those assisting him. He shall be responsible for the custody and safe-keeping of all bills, resolutions and other matters laid before or introduced into the Senate, except while the same are in the possession of the committee to whom the same shall have been referred, and when delivering the same to said committee he shall take a proper receipt therefor. He shall see that the Journal of each day's proceedings is correctly and fully kept, and fully made up before the next day's session, and be responsible for its safe-keeping. He shall have control of Room 25, which is assigned to said Secretary for the use of himself and his assistants. He shall endorse on every bill or joint or concurrent resolution, the date of its introduction and by what Senator, or of its receipt from the House, and also what action relating thereto is taken by the Senate. The Assistant Secretaries shall be under his direction, and he shall assign to them their several duties in connection with the duties of the Secretary's desk.

The Sergeant-at-Arms shall wear the appropriate badge of his office; shall attend the Senate during its sessions; shall aid in the enforcement of order under the direction of the President of the Senate; shall execute the commands of the Senate from time to time, together with such process, issued by the authority thereof, as shall be directed to him by the presiding officers; shall see that the rule prohibiting smoking in the Senate Chamber is strictly enforced; shall, upon the request of any five members, have the Senate Chamber lighted up during any evening within the session, except Sunday, to an hour not later than 10 P.M.; shall see that no person, except one authorized to do so, disturbs or interferes with desks of the members, or with the books, papers, etc., thereat; shall see that the printed bills and daily Journals are, at the earliest practicable period, properly distributed and filed upon the desks of Senators; shall have charge of the files in the Senate bill room, and shall see that no copy of bill is given out except to or upon the order of the President, a Senator or state officers; shall see that an additional doorkeeper

is detailed for duty at the Senate Chamber upon each day within the session, except Sunday from 8:30 A.M. to 10 P.M., but should not five members of the Senate desire to occupy the Chamber to that hour, the detail may be relieved at 9 P.M.; shall have charge of the messengers of the Senate and see that they severally perform their duties, and shall promptly report to the President of the Senate any inefficiency or violations of duty on the part of said messengers. He shall direct the File Clerk, and Bill Clerk, if any employed, in the discharge of their duties.

The Doorkeeper of the Senate shall wear his appropriate badge of office; shall have special charge of the main door of the Chamber during the sittings of the Senate, and shall see that the other doors of the Senate are properly attended to; shall have general charge and oversight of the additional doorkeepers of the Senate; shall detail such of the additional doorkeepers for such general or special duties as the Sergeant-at-Arms may deem proper and necessary for the efficiency of the Senate and the protection of property within the Chamber; shall see that the rule relating to the admission to the floor of the Chamber is strictly enforced; shall, ten minutes before the opening of each session of the Senate, see that the floor is cleared of all persons not entitled to occupy the same during the session; shall attend to seating visitors, and shall announce all committees and messages from the Governor or House.

The Janitor's of the Senate shall have charge, under the direction of the Sergeant-at-Arms, of the cloak and retiring rooms adjoining the Chamber, and shall see that the same are kept in proper order.

The messengers of the Senate shall attend the Senate during its sitting and perform the duties generally devolving on like employees. While the Senate is sitting, two of their number shall be detailed for service in front of the Secretary's desk. The messengers shall be under the direction of the Sergeant-at-Arms, while the Senate is not sitting, and shall attend to such duties as he may assign them.

At least four messengers shall be on duty in the Senate Chamber upon every day of the session except Sundays, from 8.30 A.M. until 6 P.M., whether the Senate is in session or not.

SENATORS

District.	NAME	P. O. ADDRESS	COUNTIES IN DISTRICT	OCCUPATION	NATIVITY	Years in Iowa.	Age
46	Bleakly, John L.	Ida Grove...	Cherokee, Ida, Plymouth...	Ret Merchant...	Ireland	31	47
12	Brooks, John T.*	Hedrick...	Keokuk, Poweshiek...	Banker	Iowa	53	53
18	Bruce, James E.*	Atlantic...	Cass, Shelby...	Atty & Bnkr	Iowa	43	43
38	Courtright, O. B.*	Waterloo...	Black Hawk, Grundy...	Lawyer	Illinois	44	53
35	Crawford, P. W.*	Dubuque...	Dubuque...	Lawyer	Vermont	64	72
16	Crossley, J. J.	Winterset...	Adair, Madison...	Lawyer	Iowa	34	34
30	Dowell, Cassius C.*	Des Moines...	Polk...	Lawyer	Iowa	39	39
33	Dunham, Geo. W.	Manchester...	Buchanan, Delaware...	Attorney...	Iowa	44	45
28	Eckles, Charles...	Marshallto'n	Marshall...	Ret Farmer...	England	38	63
2	Elerick, James...	Douds Stat'n	Jefferson, Van Buren...	Fmr & Stock	Ohio	50	64
31	Ericson, C. J. A.	Boone...	Boone, Story...	Banker	Ohio	45	63
43	Gale, A. H.	Mason City...	Cerro Gordo, Franklin, Hancock...	Banker	Iowa	40	40
48	Garst, Warren*	Coon Rapids	Carroll, Greene, Sac...	Merchant	Ohio	38	52
8	Gilliland, Shirley	Glenwood...	Mills, Montgomery...	Lawyer	Iowa	47	47
13	Harper, Sam'l H.*	Ottumwa...	Wapello...	Wh. Hdware	Ohio	50	60
37	Hartshorn, F. C.*	Clarion...	Hamilton, Hardin, Wright...	Bnkr, Rl Est	Iowa	46	46
4	Hasselquist, R. A.	Chariton...	Lucas, Wayne...	Merchant	Sweden	34	53
21	Hayward, W. C.*	Davenport...	Scott...	Manufact'rer	New York	39	56
34	Hogue, Ernest L.*	Biencoe...	Crawford, Harrison, Monona...	Farmer	Iowa	41	41
17	Hopkins, Frank M	Guthrie Cntr	Audubon, Dallas, Guthrie...	Banker.	Iowa	49	49
25	Hughes, John H., Jr	Williamsb'rg	Iowa, Johnson...	Lumber Dir	Ohio	47	62
32	Jackson, John H.	Sioux City...	Woodbury...	Lawyer	Wisconsin	19	40
11	Jamison, James H.	Oscaloa...	Clarke, Warren...	Attorney.	Iowa	42	42
14	Jones, Wm. G.	Oskaloosa	Mahaska...	Lawyer	Iowa	42	42
49	Kimmel, Wm. C.	Sheldon...	Lyon, O'Brien, Osceola, Sioux...	Fmr & Stock	Pennsylvania	20	49
47	Kinne, George...	Curlwe...	Clay, Dickinson, Emmet, Kosuth, Palo Alto	Farmer	Wisconsin	22	42
23	Lambert, Thomas.	Sabula...	Jackson...	Publisher	Iowa	48	48
7	Lewis, Lester W.*	Clarinda...	Fremont, Page	Banker.	Illinois	22	43

42	<i>Lyons, D. A.*</i>	Cresco	Howard, Winneshiek	Implt Dealer	Illinois	37	52
29	Maytag, Fred L.*	Newton	Jasper	Manufact'g	Illinois	36	46
20	Molsberry, F. M.*	Stamb's Jct	Louisa, Muscatine	Lawyer	Iowa	37	37
36	Newberry, Byron W	Strawb'ry Pt	Clayton	Lawyer	Ohio	48	50
19	Saunders, Chas. G.	Council Bl'fs	Pottawattamie	Lawyer	New York	35	42
9	<i>Smith, Fred N.*</i>	Burlington	Des Moines	Farmer	Iowa	53	53
41	Smith, James A.	Osage	Mitchell, Winneshiek, Worth	Lumberman	New York	34	52
44	Spaulding, E. C.*	Marble Rock	Chickasaw, Lloyd	Farmer	New Hampshire	34	65
24	<i>Stanton, Robert C.</i>	Monticello	Cedar, Jones	Banker	Scotland	32	42
5	Stookey, Marion F	Leon	Decatur, Ringgold, Union	Lawyer	Indiana	46	57
26	Stuck-lager, W. C.	Lisbon	Linn	Banker	Iowa	34	34
3	<i>Taylor, Lewis L.</i>	Centerville	Appanoose, Davis	Banker	Kentucky	54	60
6	Turner, Daniel W.	Corning	Adams, Taylor	Merchant	Iowa	26	26
39	<i>Wade, John F.</i>	Aredale	Brener, Butler	Fmr & Bkr	Vermont	39	44
15	Warren, J. L.	Pella	Marion, Monroe	Lawyer	Iowa	43	43
45	Whipple, Wm. P.*	Vinton	Benton, Tama	Lawyer	Iowa	46	46
40	Wilson, A. C.	Oelwein	Allamakee, Fayette	Druggist	Canada	25	45
22	<i>Wilson, John L.*</i>	Almont	Clinton	Farmer and Stock	Iowa	46	46
50	Winne, E. K.*	Humboldt	Buena Vista, Humtoldt,				
1	<i>Young, David A.*</i>	Argyle	Pocahontas	Real Estate	Iowa	29	29
27	Young, Henry	Manson	Lee	Farmer and Stock	Illinois	43	51
10	Young, John A.*	Washington	Calhoun, Webster	Physician	Illinois	31	57
			Henry, Washington	Banker	Indiana	60	65

* Elected to full term, 1901.

Republicans in Roman—42. Democrats in Italic—3.

ADDITIONAL INFORMATION.

Former Legislative Service—Brooks, S. 29; Bruce, S. 29; Courtwright, S. 29; Crawford, S. 29; Crossley, S. 28, 29; Dowell, H. 25, 26, S. 29; Dunham, H. 28, 29; Eckle, H. 22, 23; Elerick, H. 19; Ericson, H. 14, S. 26, 27; Garst, S. 26, 26, 27, 28, 29; Harper, S. 29; Hartshorn, S. 29; Hasselquist, H. 28, 29; Hayward, S. 27, 28, 29; Hogue, S. 29; Hopkins, S. 23, 29; Hughes, H. 17, 23, 29; Jamison, S. 24, 25; Jones, H. 28, 29; Lambert, H. 26, 27, S. 28, 29; Lewis, H. 22, 23, S. 24, 25, 29; Lyons, S. 27, 23, 29; Maytag, S. 29; Mo'sberry, S. 29; Saunders, elected to fill vacancy in S. 2; Smith (Fred N.) elected to fill vacancy in S. 28, 29; Smith (James A.), H. 22, 24, S. 28, 29; Spaulding, H. 24, 25, 26, S. 29; Stuck-lager, H. 24, 29; Warren, H. 28, 29; Whipple, S. 29; Wilson (John L.), H. 25, 26; S. 27, 28, 29; Winne, S. 29; Young (D. A.), S. 27, 28, 29; Young (Henry), H. 24, 25; Young (John A.), S. 29.

Military Service—Crawford, 1st Lieut., 8d Iowa Inf'ty., Captain 4th U. S. Vet. Vol. Inf'ty; Eekles, Private, Sergeant, 2d Lieut. and Captain Co. D, 3d Ills. Vet. Vol. Inf'ty; Elerick, Captain Co. A, 58th Ill. Vet. Vol. Inf'ty; Harper, Captain 4th U. S. O. T.; Hughes, Sergeant Co. G, 28th Iowa Inf'ty; Stookey, Private 4th Iowa Inf'ty; Turner, Corporal Co. K, 51st Iowa Inf'ty, S. A. W.; Young (John A.), Captain Co. A, 25th Iowa Inf'ty. Ma rtd, 44. Single, Dowell, Jackson, Newberry, Winne-4. Widowers, Elerick, Ericson-2.

OFFICERS OF THE SENATE.

Office.	Officer.	Post Office.	County.	Occupation.	Natively.	Age.	Married or Single.	Army Service.	Des Moines Residence.
President	John Herriott	Stuart	Guthrie	Druggist	Penn.	57	Married	1st Penn. Res. Cav	Savery.
Secretary	Geo. A. Newnam	Cedar Falls	Black Hawk	Dentist	N. Y.	49	Married	Ob. G. 6th N. Y. Cav	922 Ninth St.
First Asst. Sec'y	Geo. A. Wilson	Menlo	Adair	Student	Iowa	30	Single		1116 Court Ave.
Second Asst. Sec'y	John L. Gilstrap	Nevada	Story	Lawyer	Iowa	34	Single		725 East Locust.
Engrossing Clerk	Louis M. Rigby	Davenport	Scott	Stenographer	Iowa	34	Single		1330 Arlington Ave.
Enrolling Clerk	Ella G. Christie	Oskaloosa	Malaska	Merchant	Iowa	32	Single		1216 East Grand.
Journal Clerk	Cecil Dixon	Rockwell City	Calhoun	Merchant	Iowa	36	Single		1842 Twelfth St.
Sergeant-at-Arms	John Connolly	Des Moines	Polk	Litho. Soc.	Ireland	31	Married		1337 Capitol Ave.
File Clerk	K. B. Huff	Muscatine	Muscatine	Real Estate.	Ohio	43	Married		Elliott
Bill Clerk	Thos. Brown	Blencoe	Monona	Merchant	Penn.	30	Married		Eaker Block.
Postmistress	Della Clary	Des Moines	Polk	Telephone	Iowa	27	Single		906 East Lyon St.
Doorkeeper	Edith Leffingwell	Glidden	Carroll	Teacher	Iowa	27	Single		Morgan House.
	A. G. West	Kellogg	Jasper	Merchant	N. Y.	57	Married	16th Illinois	

Assistant Doorkeepers—D. W. Shean, J. H. Carter, W. McFadden, L. B. McAlpine, M. E. Erwin, J. H. Stewart, H. Armstrong, Thos. Hagen.

Janitors—Jeff Logan, P. S. Ervin, Wm. Thompson.

Pages—Ioan Jones, Nixon Stredt, Wm Robinson, Hyman Coplin, Roscoe Morrow, Karl Ackers, Fred Caswell, Martin Lind, Hartley Kelley.

STANDING COMMITTEES OF THE SENATE.

WAYS AND MEANS—24.

Senator Hayward,
Crossley,
Lewis,
Hartshorn,
Hogue,
Bruce,
Whipple,
Molsberry,

Senator Young of Washington,
Winne,
Ericson,
Hughes,
Gilliland,
Gale,
Lambert,
Smith of Des Moines.

JUDICIARY—22.

Senator Dowell,
Crawford,
Whipple,
Courtright,
Molsberry,
Bruce,
Crossley,
Dunham,

Senator Jamison,
Warren,
Gilliland,
Saunders,
Stookey,
Newberry,
Jones,
Jackson.

APPROPRIATIONS—24.

Senator Garst,
Smith of Mitchell,
Hopkins,
Harper,
Maytag,
Spaulding,
Brooks,
Saunders,

Senator Turner,
Dunham,
Young of Calhoun,
Eckles,
Stookey,
Kinne,
Lyons,
Wilson of Clinton.

AGRICULTURE—23.

Senator Brooks,
Crossley,
Hopkins,
Hogue,
Spaulding,
Courtright,
Bruce,
Ericson,

Senator Eckles,
Elerick,
Newberry,
Hughes,
Kinne,
Kimmel,
Smith of Des Moines,
Young of Lee.

RAILROADS—23.

Senator Smith of Mitchell,
Hopkins,
Hartshorn,
Courtright,
Harper,
Winne,
Molsberry,
Jamison,

Senator Saunders
Hasselquist,
Elerick,
Gale,
Jackson,
Bleakly,
Smith of Des Moines
Stirton.

CITIES AND TOWNS—23.

Senator Courtright,
Crawford,
Harper,
Whipple,
Hayward,
Dowell,
Young of Washington,
Gilliland,

Senator Stuckslager,
Jackson,
Eckles.
Turner,
Jones,
Wilson of Clinton,
Smith of Des Moines.

SUPPRESSION OF INTEMPERANCE—18.

Senator Dunham.
Smith of Mitchell,
Young of Washington,
Brooks,
Winne,
Whipple,
Stookey,

Senator Warren,
Bruce,
Gale,
Bleakly,
Lyons,
Lambert.

INSURANCE—28.

Senator Whipple,
Smith of Mitchell,
Courtright,
Maytag,
Bruce,
Ericson,

Senator Warren,
Stuckslager,
Young of Calhoun,
Turner,
Lyons,
Wade.

SCHOOLS—28.

Senator Crossley,
Molsberry,
Dunham,
Hopkins,
Whipple,
Jamison,

Senator Wilson of Fayette,
Kinne,
Warren,
Wilson of Clinton,
Taylor.

CONGRESSIONAL AND JUDICIAL DISTRICTS—20.

Senator Molsberry, Harper, Dowell, Gilliland, Hasselquist, Wilson of Fayette,	Senator Stuckslager, Young of Calhoun, Jackson, Wade, Stirton.
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SENATORIAL AND REPRESENTATIVE DISTRICTS—17.

Senator Bruce, Winne, Garst, Lewis, Smith of Mitchell, Young of Washington,	Senator Hughes, Hasselquist, Kimmel, Lyons, Young of Lee.
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ELECTIONS—29.

Senator Lewis, Molsberry, Courtright, Crossley, Bruce, Dunham,	Senator Jackson, Gilliland, Kinne, Wilson of Clinton, Stirton.
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CONSTITUTIONAL AMENDMENTS AND SUFFRAGE—22.

Senator Jamison, Courtright, Molsberry, Crossley, Newberry, Hartshorn,	Senator Stuckslager, Saunders, Jackson, Stirton, Lambert.
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PUBLIC HEALTH—17.

Senator Young of Calhoun, Spaulding, Hayward, Dowell, Crawford, Young of Washington,	Senator Ericson, Saunders, Wilson of Fayette, Taylor, Stirton.
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PUBLIC LIBRARIES—20.

Senator Ericson, Hopkins, Crossley, Courtright, Garst, Maytag,	Senator Gilliland, Young of Calhoun, Gale, Lambert, Smith of Des Moines.
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TELEGRAPH AND TELEPHONES—28.

Senator Hopkins,	Senator Stookey,
Hayward,	Kimmel,
Winne,	Kinne,
Whipple,	Lambert,
Maytag,	Wade.
Brooks,	

CORPORATIONS—18.

Senator Hogue,	Senator Bleakly,
Whipple,	Stuckslager,
Hasselquist,	Warren,
Ericson, ;	Stirton,
Turner,]	Wade.
Gilliland,	

BANKS—21.

Senator Stuckslager,]	Senator Lewis,
Young of Washington,	Bruce,
Ericson,	Gale,
Hopkins,	Stirton.
Brooks, ;	

MILITARY—18.

Senator Harper,	Senator Elerick,
Crawford,	Eckles,
Turner,	Stookey,
Young of Washington,	Wilson of Clinton.
Hughes,]	

LABOR—21.

Senator Winne,	Senator Wilson of Fayette]
Maytag,	Elerick,
Smith of Mitchell,	Lyons,
Harper,	Lambert.
Hughes,	

EDUCATIONAL INSTITUTIONS—21.

Senator Young of Washington,	Senator Hasselquist,
Hogue,	Jamison,
Brooks,	Stookey,
Hayward,	Taylor.
Wilson of Fayette,	

MINES AND MINING—17.

Senator Warren,	Senator Jamison,
Ericson,	Young of Calhoun
Hasselquist,	Young of Lee,
Maytag,	Wade,
Elerick,	

HIGHWAYS—18.

Senator Hasselquist,
Spaulding,
Hartshorn,
Lewis,
Winne,

Senator Kinne,
Dunham,
Young of Lee,
Stirton.

PHARMACY—17.

Senator Wilson of Fayette,
Hopkins,
Hayward,
Garst,
Saunders,

Senator Molsberry,
Newberry,
Lyons,
Lambert.

PRINTING—29.

Senator Hartshorn,
Courtright,
Elerick,
Bleakly,
Eckles,

Senator Newberry,
Stookey,
Young of Calhoun,
Lambert.

CHARITABLE INSTITUTIONS.

Senator Spaulding
Hogue,
Harper,
Dunham,
Jackson,

Senator Kinne
Kimmel,
Lyons,
Young of Lee.

BUILDING AND LOANS—19.

Senator Jones
Crossley,
Harper,
Wilson of Fayette
Hughes,

Senator Garst,
Bleakly,
Taylor,
Wade.

RULES—24.

Senator Maytag,
Dowell,
Hogue,
Hayward,
Dunham,

Senator Warren,
Gale,
Wilson of Clinton,
Lambert.

COMPENSATION OF PUBLIC OFFICERS—29.

Senator Jackson,
Hartshorn,
Lewis,
Jamison,

Senator Bleakly,
Smith of Des Moines,
Taylor.

PENITENTIARIES AND PARDONS—19.

Senator Saunders,
Brooks,
Crawford,
Smith of Mitchell,

Senator Newberry,
Stookey,
Young of Lee.

FEDERAL RELATIONS—20.

Senator Crawford,
Hogue,
Hartshorn,
Lewis,

Senator Kimmel,
Young of Lee,
Smith of Des Moines.

CLAIMS—19.

Senator Eckles,
Garst,
Spaulding,
Crawford,

Senator Lewis,
Kimmel,
Young of Lee.

COMMERCE—16.

Senator Hughes,
Harper,
Dowell,
Hogue,

Senator Elerick,
Turner,
Taylor.

MANUFACTURES—16.

Senator Gale,
Maytag,
Stuckslager,

Senator Young of Lee,
Taylor.

PUBLIC BUILDINGS—26.

Senator Stookey,
Brooks,
Garst,

Senator Jones,
Wade.

HORTICULTURE AND FORESTRY—16.

Senator Elerick,
Spaulding,
Jones,

Senator Smith of Des Moines
Lyons.

FISH AND GAME—20.

Senator Kimmel,
Winne,
Jones,

Senator Wilson of Clinton
Lambert.

PUBLIC LANDS—26.

Senator Bleakly,
Hogue,

Senator Wilson of Clinton.

ENGROSSED BILLS—26.

Senator Newberry,
Jones,

Senator Hartshorn.

ENROLLED BILLS—22.

Senator Turner,
Winne,

Senator Taylor.

SENATORS AND THEIR RESPECTIVE COMMITTEES.

BLEAKLY.

Public Lands—Chairman,
Printing,
Building and Loan,
Compensation of Public officers.

Corporations,
Railroads,
Suppression of Intemperance.

BROOKS.

Agriculture—Chairman,
Appropriations,
Public Buildings,
Educational Institutions.

Penitentiaries and Pardons,
Telegraph and Telephones,
Banks,
Suppression of Intemperance.]

BRUCE.

Senatorial and Representative
Districts—Chairman,
Ways and Means,
Judiciary,
Elections,

Banks,
Agriculture,
Suppression of Intemperance,
Insurance.

COURTRIGHT.

Cities and Towns—Chairman,
Judiciary,
Printing,
Elections,
Constitutional Amendments and
Suffrage,

Public Libraries,
Agriculture,
Railroads,
Insurance.

CRAWFORD.

Federal Relations—Chairman,
Judiciary,
Claims,
Penitentiaries and Pardons,

Public Health,
Military,
Cities and Towns.

CROSSLEY.

Schools—Chairman,
Ways and Means,
Judiciary,
Building and Loan,
Elections,

Constitutional Amendments and
Suffrage,
Public Libraries,
Agriculture.

DOWELL.

Judiciary—Chairman,
Commerce,
Rules,

Public Health,
Cities and Towns,
Congressional and Judicial Districts.

DUNHAM.

Suppression of Intemperance—
Chairman,
Judiciary,
Appropriations,
Highways,

Charitable Institutions,
Rules,
Elections,
Schools.

ECKLES.

Claims—Chairman,
Appropriations,
Printing,

Military,
Agriculture,
Cities and Towns.

ELERICK.

Horticulture and Forestry—Chair-
man,
Commerce,
Mines and Mining,
Printing,

Military,
Labor,
Agriculture,
Railroads.

ERICSON.

Public Libraries—Chairman,
Ways and Means,
Mines and Mining,
Corporations,

Banks,
Agriculture.
Insurance.

GALE.

Manufactures—Chairman,
Ways and Means,
Rules,
Public Libraries,

Banks,
Railroads,
Suppression of Intemperance.

GARST.

Appropriations—Chairman,
Claims,
Public Buildings,
Pharmacy,

Building and Loan,
Public Libraries,
Senatorial and Representative Dis-
tricts.

GILLILLAND.

Ways and Means,
Judiciary,
Elections,
Public Libraries,

Corporations,
Cities and Towns,
Congressional and Judicial Districts.

HARPER.

Military—Chairman,
Appropriations,
Commerce,
Charitable Institutions.
Building and Loan,

Labor,
Railroads,
Cities and Towns,
Congressional and Judicial Districts.

HARTSHORN.

Printing—Chairman,
Ways and Means,
Federal Relations,
Engrossed Bills,
Highways,

Compensation of Public Officers,
Constitutional Amendments and
Suffrage,
Railroads.

HASSELQUIST.

Highways—Chairman,
Educational Institutions,
Mines and Mining,
Corporations,

Railroads,
Congressional and Judicial Districts,
Senatorial and Representative Dis-
tricts.

HAYWARD.

Ways and Means—Chairman,
Educational Institutions,
Pharmacy,
Rules,

Public Health,
Telegraph and Telephones,
Cities and Towns.

HOGUE.

Corporations—Chairman,
Ways and Means,
Federal Relations,
Commerce,
Public Lands,

Educational Institutions,
Charitable Institutions,
Rules,
Agriculture.

HOPKINS.

Telegraph and Telephones—Chair-
man,
Appropriations,
Pharmacy,
Public Libraries,

Banks,
Agriculture,
Railroads,
Schools. ;

HUGHES.

Commerce—Chairman,
Ways and Means,
Building and Loan,
Military,

Labor,
Agriculture,
Senatorial and Representative Dis-
tricts.

JACKSON.

Compensation of Public Officers—
Chairman,
Judiciary,
Charitable Institutions,
Elections,

Constitutional Amendments and
Suffrage,
Railroads,
Cities and Towns,
Congressional and Judicial Districts.

JAMISON.

Constitutional Amendments and
Suffrage—Chairman,
Judiciary,
Educational Institutions,

Mines and Mining,
Compensation of Public Officers,
Railroads,
Schools.

JONES.

Building and Loan—Chairman,
Judiciary,
Public Building,
Horticulture and Forestry,

Fish and Game,
Engrossed Bills,
Cities and Towns.

KIMMEL.

Fish and Game—Chairman,
Federal Relations,
Claims,
Charitable Institutions,

Telegraph and Telephones,
Agriculture,
Senatorial and Representative Dis-
tricts.

KINNE.

Appropriations,
Highways,
Charitable Institutions,
Elections,

Telegraph and Telephones,
Agriculture,
Schools.

LAMBERT.

Ways and Means,
Fish and Game,
Pharmacy,
Printing,
Rules,
Constitutional Amendments and
Suffrage,

Public Libraries,
Telegraph and Telephones,
Labor,
Suppression of Intemperance.

LEWIS.

Elections—Chairman,
Ways and Means,
Federal Relations,
Claims,
Highways,

Compensation of Public Officers
Banks,
Senatorial and Representative Dis-
tricts.

LYONS.

Appropriations,
Horticulture and Forestry,
Pharmacy,
Charitable Institutions,
Labor,

Suppression of Intemperance,
Insurance,
Senatorial and Representative
Districts.

MAYTAG.

Rules—Chairman,
Appropriations,
Manufactures,
Mines and Mining,

Public Libraries,
Telegraph and Telephones,
Labor,
Insurance.

MOLSBERY.

Congressional and Judicial
Districts—Chairman,
Ways and Means,
Judiciary,
Pharmacy,

Elections,
Constitutional Amendments and
Suffrage,
Railroads,
Schools.

NEWBERRY.

Engrossed Bills—Chairman,
Judiciary,
Pharmacy,
Printing,

Penitentiaries and Pardons,
Constitutional Amendments and
Suffrage,
Agriculture.

SAUNDERS.

Penitentiaries and Pardons—
Chairman,
Judiciary,
Appropriations,
Pharmacy,

Constitutional Amendments and
Suffrage,
Public Health,
Railroads.

SMITH OF DES MOINES.

Ways and Means,
Federal Relations,
Compensation of Public
Officers,

Public Libraries,
Agriculture,
Railroads,
Cities and Towns.

SMITH OF MITCHELL.

Railroads—Chairman,
Appropriations,
Penitentiaries and Pardons,
Labor,

Suppression of Intemperance,
Senatorial and Representative
Districts.

SPAULDING

Charitable Institutions—Chairman, Appropriations, Claims, Agriculture,	Horticulture and Forestry, Highways, Public Health.
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STIRTON.

Highways, Elections, Constitutional Amendments and Suffrage, Public Health,	Corporations, Banks, Railroads, Congressional and Judicial Districts. ¹
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STOOKEY.

Public Buildings—Chairman, Judiciary, Appropriations, Educational Institutions,	Printing, Penitentiaries and Pardons, Telegraph and Telephones, Military.
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STUCKSLAGER.

Banks—Chairman, Manufactures, Constitutional Amendments and Suffrage,	Corporations, Cities and Towns, Insurance, Congressional and Judicial Districts
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TAYLOR.

Commerce, Manufactures, Enrolled Bills, Educational Institutions,	Building and Loan, Compensation of Public Officers Public Health, Schools.
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TURNER.

Enrolled Bills—Chairman, Appropriations, Commerce, Corporations,	Military, Cities and Towns, Insurance.
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WADE.

Public Buildings, Building and Loan, Corporations, Insurance,	Mines and Mining, Telegraph and Telephones, Congressional and Judicial Districts.
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WARREN.

Mines and Mining—Chairman, Rules, Suppression of Intemperance, Judiciary,	Corporations, Insurance, Schools.
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WHIPPLE.

Insurance—Chairman,
Judiciary,
Corporations,
Cities and Towns,

Schools,
Ways and Means,
Telegraph and Telephones,
Suppression of Intemperance.

WILSON OF FAYETTE.

Pharmacy—Chairman,
Building and Loan,
Public Health,
Schools,

Educational Institutions,
Labor,
Congressional and Judicial Districts.

WILSON OF CLINTON.

Appropriations,
Public Lands,
Elections,
Cities and Towns,

Fish and Game,
Rules,
Military,
Schools.

WINNE.

Labor—Chairman,
Fish and Game,
Highways,
Railroads,
Suppression of Intemperance,

Ways and Means,
Enrolled Bills,
Telegraph and Telephones,
Senatorial and Representative Dis-
tricts.

YOUNG OF LEE.

Federal Relations,
Manufactures,
Highways,
Penitentiaries and Pardons,
Senatorial and Representative Dis-
tricts,

Claims,
Mines and Mining,
Charitable Institutions,
Agriculture.

YOUNG OF CALHOUN.

Public Health—Chairman,
Printing,
Insurance,
Appropriations,

Mines and Mining,
Public Libraries,
Congressional and Judicial Districts.

YOUNG OF WASHINGTON.

Educational Institutions—Chairman,
Banks,
Cities and Towns,
Senatorial and Representative Dis-
tricts

Ways and Means,
Public Health,
Military,
Suppression of Intemperance.

RULES OF THE HOUSE.

DUTIES OF THE SPEAKER.

1. He shall take the chair every day precisely at the hour to which the House shall have adjourned; shall immediately call the members to order, and on appearance of a quorum shall cause the Journal of the preceding day to be read.

2. He shall preserve order and decorum, and speak to points of order in preference to other members, rising from his seat for that purpose; and he shall decide questions of order, subject to an appeal to the House by any two members.

3. He shall rise to put a question, but may state it sitting.

4. Questions shall be distinctly put in this form, to wit: "As many as are of the opinion that (as the question may be) say 'aye;' " and after the affirmative voice is expressed, "As many as are of a contrary opinion, say 'no.' " If the Speaker doubts, or a division is called for, the House shall be divided. Those in the affirmative of the question shall first rise from their seats, and afterward those in the negative.

5. The Speaker shall have a right to name any member to perform the duties of the chair, but such substitution shall not extend beyond an adjournment, except that in case of the absence of the regular Speaker, the House may proceed to elect a Speaker pro tem., whose acts shall have the same validity as those of the Speaker.

6. All committees shall be appointed by the Speaker, unless otherwise especially directed by the House.

7. In all cases of a call of the yeas and nays, the Speaker shall vote; in other cases he shall not be required to vote unless the House is equally divided, or unless his vote, if given to the minority, will make the division equal, and in case of such equal division the question shall be lost.

8. All acts, addresses and joint resolutions shall be signed by the Speaker, and all writs, warrants, subpoenas, issued by order of the House, shall be under his hand and attested by the Clerk.

9. In case of any disturbance or disorderly conduct in the lobby, the Speaker or Chairman of the Committee of the Whole House shall have the power to have the same cleared.

10. After the Journal is read the following order shall govern:

1. Business pending at last previous adjournment.
2. Petitions or remonstrances to be offered.
3. Reports of committees:
 - Ways and Means.
 - Judiciary.
 - Appropriations.
 - Railroads and Commerce.
 - Schools and Text-Books.
 - Normal Schools.
 - Suppression of Intemperance.
 - Agriculture.
 - Mines and Mining.
 - Retrenchment and Reform.
 - Claims.
 - Compensation of Public Officers.
 - Insurance.
 - Banks and Banking.
 - Animal Industry.
 - County and Township Organization.
 - Roads and Highways.
 - Building and Loan.
 - Other committees.
4. Resolutions laid over under Rule 34.
5. Bills to be introduced.
6. Resolutions.
7. Messages and communications on the Speaker's table.
8. Bills and resolutions read a second time.
9. Bills on their passage.
10. Reports in the possession of the House shall be taken up in their order.
11. On and after the 10th day of February of each regular session, bills and joint resolutions, which have been read the second time and engrossed, shall be taken up in their proper order at three o'clock in the afternoon of each session, and put upon their passage.

OF DECORUM AND DEBATE.

11. When any member is about to speak in Debate, or deliver any matter to the House, he shall rise from his seat and respectfully address himself to the presiding officer by his title, saying, "Mr. Speaker," and shall not proceed until he shall be recognized by the Chair, and shall confine himself to the question under debate and shall avoid personalities.

12. When any member in speaking, or otherwise, transgresses the rules of the House, the Speaker shall, or any member may, call him to order; in which case the member so called to order shall immediately sit down, but may be permitted with leave of the House to explain; and the House shall, if appealed to, decide the case, but without debate. If there be no appeal, the decision of the Chair shall be submitted to; if the decision be in favor of the member so called to order, he is at liberty to proceed. If the case requires it, he shall be liable to the censure of the House.

13. When two or more members happen to rise at once, the Speaker shall designate the member entitled to speak.

14. No member shall speak more than once on the same question without leave of the House, nor more than twice until every member choosing to speak shall have spoken, except as provided in section 26; provided further, when bills are being considered on their second reading debate thereon shall be limited to fifteen minutes to each member desiring to speak thereon, which may be extended by consent of the House.

15. While the Speaker is putting any question, or addressing the House, none shall walk out or across the House, or, when a member is speaking, shall entertain private discourse, nor while a member is speaking, pass between him and the Chair.

16. No member shall vote on any question in the event of which he is personally interested.

17. Upon a division and count of the House on any question, only those members standing in their places shall be counted.

18. Every member who shall be in the House when the question is put shall give his vote, unless the House for special reasons shall excuse him; but such member must ask to be excused before commencing to take the vote on the main question.

19. When a motion is made and seconded, it shall be stated by the Speaker; or, being in writing, it shall be passed to the desk and read aloud by the Clerk before debated.

20. Every motion, except subsidiary or incidental motions shall be reduced to writing if the Speaker or any member desires it, but this exception shall not apply to motions to amend.

21. All bills, resolutions, petitions, memorials or other papers shall be accompanied by the name of the member presenting the same, and also the name of the county.

22. After a motion is stated by the Speaker, or read by the Clerk, it shall be deemed to be in possession of the House, but may be withdrawn by leave of the House.

23. When a question is under debate no motion shall be received but to adjourn; to lie on the table; for the previous question; to postpone to a certain day; to commit or amend; to postpone indefinitely; which several motions shall have precedence in the order in which they are arranged, and no motion to postpone to a day certain, to commit or postpone indefinitely being decided, shall again be allowed on the same day, and at the same stage of the bill or proposition. A motion to strike out the enacting words of a bill shall have precedence of a motion to amend; and, if carried, shall be considered equivalent to its rejection.

24. When a resolution shall be offered or a motion made to refer any subject, and different committees shall be proposed, question shall be taken in the following order: The Committee of the Whole House; a Standing Committee; a Select Committee.

25. A motion to adjourn shall always be in order, except when a member is speaking, or the House voting.

26. The previous question shall always be put in this form: "Shall the main question now be put?" It shall only be admitted when demanded by a majority of the members present, and its effect shall be to put an end to all debate, and to bring the House to a direct vote upon amendments and then upon the main question, except that the member in charge of the measure under consideration shall have ten minutes in which to close the discussion before the vote is taken. On a motion for the previous question and prior to seconding the same, a call of the House shall be in order; but after such motion shall have been adopted no call shall be in order prior to the decision of the main question. If the previous question is decided in the neg-

ative, the House shall proceed with the matter before it the same as though the previous question had not been moved.

27. Motions to lie on the table, to adjourn, and for the previous question, shall be decided without debate.

28. When a question is postponed indefinitely, it shall not be acted upon during the session.

29. Any member may call for a division of the question, which shall be divided if it comprehends questions so distinct that one being taken away, the rest may stand entire for the discussion of the House. A motion to strike out being lost, shall preclude neither an amendment nor a motion to strike out and insert. A motion to strike out and insert shall be deemed indivisible.

30. Motions and reports may be committed at the pleasure of the House.

31. No motion or proposition on a subject different from that under consideration, shall be admitted under color of amendment.

32. When a motion has been made and carried or lost, it shall be in order for any member of the majority, on the same or succeeding day, to move for a reconsideration thereof, and such motion shall take precedence of all other questions except the consideration of a conference report, a motion to fix the day to which the House shall adjourn, to adjourn, or to take a recess, and shall not be withdrawn after the said succeeding day without the consent of the House; and thereafter any member may call it up for consideration, provided that such motion, if made during the last six days of the session, shall be disposed of when made.

33. Petitions, memorials, and other papers addressed to the House, shall be presented by the Speaker or a member in his place; a brief statement of the contents thereof shall verbally be made by the introducer, and shall be referred to the committee of his selection, unless otherwise ordered by the House.

34. A proposition requesting information from the Governor, Secretary or any other State officer, and all resolutions shall lie on the table one day for consideration, unless otherwise ordered by the House; and all such propositions shall be taken up for consideration in the order they were presented, immediately after the reports are called for from the Select Committee, and when adopted, the Clerk shall cause the same to be delivered.

35. Any five members, if the Speaker be in the Chair, shall be authorized to compel the attendance of absent members.

36. Upon calls of the House, or in taking the yeas and nays on any question, the names of the members shall be called alphabetically, except that "Mr. Speaker" shall be called last.

37. No member shall absent himself from the service of the House without leave unless he be sick or unable to attend.

38. Upon the call of the House, the names of the members shall be called over by the Clerk, and the absentees noted, after which the names of the absentees shall again be called over, and the Sergeant-at-Arms be directed by the Speaker to compel their attendance. Any member occupying his seat during a call of the House shall be counted by the Speaker and his name entered in the Journal as being present but not voting, for the purpose of making a quorum.

39. No committee shall sit during the sitting of the House without special leave.

40. A majority of the members shall constitute a quorum, and upon demand of any two members the yeas and nays shall be ordered; the members demanding the yeas and nays shall arise for that purpose, and their names shall be entered in the Journal.

41. The hours to which this House shall stand adjourned from day to day shall be nine o'clock A.M., and two o'clock P.M., unless otherwise ordered by the House.

42. A committee on pairs shall be appointed, to consist of two persons, one of whom shall be selected by the members of each of the two dominant political parties represented in the House. It shall be the duty of the committee to arrange all pairs between members, and to announce such pairs and the time for which they shall continue, to the House, which announcement shall be entered on the Journal. Thereafter neither member so paired shall vote (upon any question of a political or partisan nature) until the time of pairing has expired, unless such pair is sooner dissolved by the mutual agreement of the persons so paired. When pairs are dissolved such dissolution shall be entered on the Journal of the House.

ON BILLS.

43. All bills and joint resolutions introduced in the House shall be typewritten accompanied by a carbon duplicate; one copy shall be marked and known as the "original" and one copy marked and designated as "printer's copy." The "original" shall, after engrossment, be subject to delivery to

the chairman of the committee to which reference is made, and the "printer's copy" shall be delivered to the State Printer.

44. No bill carrying an appropriation shall be introduced after March 1, 1904, except by the Committee on Appropriations.

45. Every bill shall receive three several readings, but no bill shall have its second and third reading on the same day.

46. The first reading of the bill shall be for information; and if opposition be made to it, the question is: "Shall this bill be rejected?" If no opposition be made, or if the question to reject be negatived, the bill shall go to its second reading without a question.

47. Upon a second reading of a bill, the Speaker shall state that it is ready for commitment, amendment or engrossment; and if committed, then the question shall be whether to a select or a standing committee, or to a Committee of the Whole House. If to a Committee of the Whole House, the House shall determine on what day.

48. All bills to appropriate money shall be referred to the Appropriation Committee, and all bills pertaining to the levy, assessment or collection of taxes shall be referred to the Committee on Ways and Means.

49. After a bill has been committed and reported back it shall be considered on its second reading after the amendments of committee have been read.

50. After the commitment and report thereof to the House, or any time before its passage, a bill may be re-committed.

51. All bills ordered to be engrossed shall be written with typewriter with black record ribbon.

52. No amendment, unless by way of correcting an error or omission, shall be received to any bill on its third reading, and no debate shall be allowed on the same.

53. When a bill shall pass it shall be certified by the Clerk, noting the day of its passage at the foot thereof.

54. No standing rule or order of the House shall be rescinded or changed without one day's notice being given of the motion therefor, nor shall any rule be suspended except by a vote of at least two-thirds of the members present; nor shall the order of business, as established by the rules of the House, be postponed or changed except by a vote of at least two-thirds of the members present.

55. It shall be in order for the Committee on Enrolled Bills to report at any time.

56. All bills, memorials and joint resolutions shall be printed for the use and information of the members, unless otherwise ordered by the House.

57. When any matter is referred to a standing committee by motion of any member, it shall be the duty of the chairman of such standing committee to notify such member of the time of their sitting upon such matter referred, and such member shall be permitted to confer with such committee during their consideration of such matter, but no one not a member of the committee shall be present when the final vote is taken on any matter under consideration.

58. Each standing committee of the House shall classify all bills referred to it. The bills of the greatest public importance shall be placed in the first class, and all other bills in the second class. Bills of the first class shall be first considered and reported to the House and no committee shall retain possession of any bill longer than ten days, except by consent of the House. But this shall not apply to the Committee on Appropriations.

59. The rules of parliamentary practice comprised in Cushing's Manual shall govern the House in all cases where they are not inconsistent with the standing rules of this House, and Joint Rules of both Houses.

60. Joint resolutions shall be framed and treated as a bill.

61. The chairman or clerk of a committee to which a bill is referred shall note thereon the date of its reference, and it shall be the duty of each committee to report back all bills in its hands within ten days after the order of reference, unless longer time is granted by a vote of the House. The minority of any committee may present its recommendations in writing with the report of the committee, and the same shall be printed in the Journal and said recommendation may, by vote of the House, be substituted for the report of the committee. The clerks of the different committees shall be subject to their respective chairmen.

62. Seven members, or a majority, shall constitute a quorum of each standing committee.

63. When a committee is called the chairman of such committee shall be considered as having the floor until the next committee shall be called.

64. When the House reaches the order of the "Introduction of Bills" the roll shall be called, and each member in his order shall introduce such bills as he may desire.

65. No member or officer of the House shall be permitted to read newspapers within the bar of the House while the Journal is being read, nor shall any person be permitted to smoke on the floor of the House during its session, or in the galleries at any time.

66. No one shall be admitted to the floor of the House during its sessions, except members of the General Assembly and employes in the performance of their duties, ex-members of the General Assembly and officers of the State Government, Judges and ex-Judges of the Supreme, District and Circuit Courts, the families of members of the House, Trustees, Superintendents and officers of the State Institutions, on the invitation of the member from the district in which the institution is located, and each member shall have the right to admit a friend who may be visiting him. Representatives of the press to be admitted to the reporters' gallery.

DUTIES OF OFFICERS.

67. The Clerk of the House shall have charge of the Clerk's desk, and shall see that no one is permitted therein except himself and those assisting him. He shall be responsible for the custody and safe-keeping of all bills, resolutions and other matters laid before or introduced into the House, except while the same are in the possession of the committee to whom the same shall have been referred, and when delivering the same to said committee he shall take a proper receipt therefor. He shall see that the Journal of each day's proceedings is correctly and fully kept and fully made up before the next day's session, and be responsible for its safe-keeping. He shall have control of rooms four and five, which are assigned to said Clerk for the use of himself and his assistants. He shall endorse on every bill or joint or concurrent resolution, the date of its introduction and by what member, or of its receipt from the Senate, and also what action relating thereto is taken by the House. The assistant clerks shall be under his direction and he shall assign them their several duties in connection with the work of the Clerk's desk.

The Sergeant-at-Arms shall wear the appropriate badge of his office, shall attend the House during its sessions, shall aid during the enforcement of order, under the direction of the Speaker of the House, shall execute the commands of the House from time to time, together with such process, issued by the authority thereof, as shall be directed to him by the presiding offi-

cer; shall, upon the request of any member, have the House lighted up during any evening within the session, except Sunday, to an hour not later than 10 P.M.; shall see that no person, except those authorized so to do, disturbs or interferes with the desks of the members, or with the books, papers, etc., thereat; shall see that the printed bills are properly distributed and filed upon the desks of the members, shall have charge of the files in the House bill room, and shall see that no copy of bill is given except to or upon the order of the Speaker of the House, or member, or State officer; shall see that an additional doorkeeper is detailed for duty at the House upon each day within the session, except Sunday, from 8:30 A.M. to 10:00 P.M.: but should no member of the House desire to occupy the chamber to that hour the detail may be relieved at 9:00 P.M.; shall have charge of the messengers of the House and see that they severally perform their duties, and shall promptly report to the Speaker of the House any inefficiency or violations of duty on the part of said messengers.

The Doorkeeper of the House shall wear his appropriate badge of office; shall have special charge of the main door of the chamber during the sittings of the House, and shall see that the other doors of the House are properly attended to; shall have general charge and oversight of the additional doorkeepers of the House; shall detail such of the additional doorkeepers for such general or special duties as the Sergeant-at-Arms may deem proper or necessary for the efficiency of the House and the protection of the property within the chamber; shall see that the rule relating to admission to the floor of the chamber is strictly enforced; shall, ten minutes before the opening of each session of the House, see that the floor is cleared of all persons not entitled to occupy the same during the session; shall attend to seating visitors, and shall announce all committees and messages from the Governor or Senate.

The Janitors of the House shall have charge, under the direction of the Sergeant-at-Arms, of the cloak and retiring rooms adjoining the chamber, and shall see that the same are kept in proper order.

The Messengers of the House shall attend the House during its sittings and perform the duties generally devolving on like employees. The messengers shall be under the direction of the Sergeant-at-Arms while the House is not sitting, and shall attend to such duties as he may assign them.

OF COMMITTEE OF THE WHOLE HOUSE.

68. In forming Committee of the Whole House, the Speaker shall leave his chair, and a Chairman to preside in committee shall be appointed by the Speaker.

69. Upon bills committed to the Committee of the Whole House, the bill shall be first read throughout by the Clerk or Chairman, and then read again or debated by the clauses, leaving the preamble to be last considered. After report, the bill shall be again subject to be debated and amended by clauses before a question to engross it be taken.

70. All amendments made to an original motion in Committee shall be incorporated in a motion and so reported.

71. All amendments made to a report committed to a Committee of the Whole House shall be noted and reported as in the case of bills.

72. In filling up blanks in the Committee of the Whole House, and in the House, the largest sum and the longest time and the highest number shall be first put.

73. The Rules of the House shall be observed in Committee of the Whole House, so far as they are applicable.

JOINT RULES.

1. Whenever either House shall amend a measure, and the other House shall refuse to concur in and adopt the amendment, the House which has adopted such amendment shall either insist on or recede from the same. But when a measure originating in one House is amended in the other, the House in which it originated may amend such amendment, and a motion therefor shall take precedence of a motion to recede, and a motion to recede of a motion to insist. In case a motion to insist on the amendment be decided in the negative, such action shall be deemed a receding from the amendment, and so entered upon the Journal of the House. In case the amendment is insisted upon, the House so insisting shall request a Committee of Conference on the subject of disagreement, and shall appoint a committee therefor. The other House shall thereupon appoint such a committee. Unless another number is specified in said request, such Conference Committee shall consist of four members from each House. They shall meet at a convenient time, to be agreed upon by their chairman, and having conferred freely, each shall report to their respective House the result of their conference. In case of agreement, the report shall be first made, with the papers referred accompanying it, to the House which refused to concur, and there acted upon; and such action shall be immediately reported by the Secretary or Clerk to the other House, the papers referred accompanying the message. In case of disagreement of Conference Committee, the papers shall remain with the House which insisted on the amendment. The agreeing report of a Conference Committee shall be made, read and signed in duplicate by all the members of the Committee, or by a majority of those of each House; one of the duplicates being retained by the committee of each House. Should either House disagree to the report of the Committee, such House shall appoint a second Committee, and request a further conference, which shall be

acceded to by the other House before adhering. The motion for a Committee of Conference, and the report of such Committee shall be in order at any time. When both Houses shall have adhered to their disagreement, a bill or motion is lost.

2. When a message shall be sent from either House to the other, it shall be announced at the door of the House to which it is sent, by the doorkeeper thereof, and shall be respectfully communicated to the Chair by the person by whom it is sent.

3. All messages between the two Houses shall be communicated by the Secretary or Chief Clerk, or their respective assistants.

4. When a bill shall have passed both Houses, it shall be duly enrolled by the Enrolling Clerk of the House in which it originated, and the fact of its origin shall be certified by the endorsement of the Secretary or Clerk thereof.

5. When the bills are enrolled they shall be examined by a Joint Committee of two from the Senate and two from the House of Representatives, who shall be a Standing Committee for that purpose, and who shall carefully compare the enrollment with the engrossed bills, as passed in the Houses, correct any errors therein, and make report thereof forthwith to their respective Houses.

6. After the report, each bill shall be signed, first by the Speaker of the House of Representatives, and then by the President of the Senate, in the presence of their respective Houses.

7. After a bill shall have been thus signed in each House, it shall be forthwith presented, by Committee of the House in which the bill originated, to the Governor for his approval, and they shall forthwith report the date of presentation, which shall be entered upon the Journal of the House in which the bill originated.

8. All orders, resolutions, memorials or other votes, which are to be presented to the Governor for his approval, shall be enrolled, examined, signed and presented in the same manner as bills.

9. When any bill, resolution or memorial, which shall have passed in one House, is rejected or adopted in the other, notice of such action shall be given to the House which passed the same. And each bill, resolution or memorial shall have properly endorsed thereon, at the time of its transmission, a statement signed by the Secretary or Clerk, of the action which has been

taken thereon by the House transmitting the same, with the dates thereof.

10. When a bill, resolution or memorial, which shall have passed one House, is rejected in the other, it shall not be again introduced during the session without five days' notice and leave of a majority of the members of the House in which the same is sought to be introduced.

11. Each House shall transmit to the other with any bill, resolution or memorial all papers upon which the same shall be founded.

12. When any report, bill or resolution shall be ordered printed by either House, without stating the number, three hundred copies shall be printed for the use of both Houses, but when any bill or resolution which may have passed one House is ordered printed by the other, a greater number of copies shall not be printed than the House making the order shall determine.

13. It shall be the duty of the Chief Clerk of the House of Representatives, and the Secretary of the Senate, when any document, except bills and resolutions, is ordered to be printed in their respective Houses, forthwith to communicate such order to the other House.

14. In all elections in Joint Convention of the two Houses, the names of all the members shall be arranged in alphabetical order, and they shall be called upon to vote in the order in which they stand arranged.

15. It shall be the duty of the Committee on Claims in each House to keep a book of record, in which shall be entered each claim for money against the State referred to them, whether presented in favor of private persons, or municipal or other corporations, entering therein the name of the claimant, the amount of the claim, the grounds thereof, with note of the evidence offered in support of the same, and the final conclusion of the Committee thereon. At the close of the session said book of record shall be deposited with the Auditor of State, to be kept by him, and he shall provide an index, showing the names of the claimants recorded therein. At any subsequent session the same shall be delivered, when desired, to the like committee having jurisdiction of such claims, and shall always be open to the examination of the said Committee of either House.

REPRESENTATIVES

District	NAME	P. O. ADDRESS	COUNTIES IN DISTRICT	OCCUPATION	NATIVITY	Years in Iowa	Age
7	Bailey, M. Z.	Diagonal	Ringgold	Farmer	Iowa	47	47
48	Bealer, E. J. C.	Cedar Rapids	Linn	Contractor and Quarryman	Switzerl'nd	47	58
68	Birby, R. J.	Edgewood	Delaware	Farmer and Stockman	Iowa	49	49
40	Boland, Edward	Williamsburg	Iowa	Farmer	Ireland	35	62
18	Buchanan, A. W.	Ottumwa	Wapello	Wholesale Flour and Grain	New Jersey	33	54
77	Buckingham, F. N.	Alta	Buena Vista	Farmer	Illinois	19	47
43	Calderwood, M. H.	Eldridge	Scott	Banker	Iowa	40	40
20	Carden, William	Winfield	Henry	Merchant	Iowa	38	38
45	Carstensen, Theo	Clinton	Clinton	Wood worker	Germany	22	34
19	Cassel, A. F.	Four Corners	Jefferson	Farmer	Sweden	58	71
78	Chassell, E. D.	LeMars	Plymouth	Publisher	New York	36	45
82	Cheney, A. H.	Spencer	Clay, Palo Alto	Implement Dealer	Vermont	40	65
63	Christianson, Geo. P.	Randall	Hamilton	Banker	Denmark	36	40
36	Clarke, G. W.	Adel	Dallas	Lawyer	Indiana	47	51
86	Clary, Tim C.	New Hampton	Chickasaw	Lawyer	Wisconsin	32	41
18	Cobb, William	Bedford	Taylor	Minister and Farmer	Indiana	58	63
59	Coburn, George F.	Marcus	Cherokee	Farmer	Illinois	28	47
55	Colclo, C. C.	Carroll	Carroll	Editor	Ohio	49	52
73	Conn, Stanley	Parkersburg	Butler	Farmer	Canada	47	48
9	Croze, Chas. F.	Shenandoah	Page	Merchant	Iowa	47	47
51	Cummings, B. F.	Marshalltown	Marshall	Lawyer	New York	39	39
27	Dashiell, Mark A.	Indianola	Warren	Physician and Surgeon	Indiana	50	75
56	Davie, William A.	Dunlap	Crawford	Farmer	Illinois	47	48
30	DeLano, L. L.	Atlantic	Cass	Lawyer	Ohio	37	57
53	Doran, Justin R.	Beaver	Boone	Farmer	New York	32	53
74	Dow, D. W.	Hamp'lon	Franklin	Attorney	Michigan	44	67
37	English, Emory H.	Valley Junction	Polk	Editor and Publisher	Iowa	33	33

70	Flenniken, J. C.	Strawberry Point.	Clayton	Real Estate	Iowa	41
31	Freeman, W. H.	Oakland	Pottawattamie	Stock and Grain	Illinois	38
69	Freuden, A. F.	Dubuque	Dubuque	Lumber Merchant	Germany	19
24	Geneva, Thomas	What Cheer	Keokuk	Merchant and Live Stock	England	44
52	Greeley, W. M.	Ames	Story	Banker	New York	37
28	Greene, Robert A.	Peru	Madison	Merchant	Iowa	38
13	Gregory, Ross H.	Nevinville	Adams	Physician	Illinois	10
76	Hakes, Montague	Laurens	Focahontas	Merchant	Iowa	45
25	Hambleton, A. F. N	Oskaloosa	Malaska	Real Estate and Insurance	Iowa	46
83	Hanna, George W.	Lu Verne	Kossuth	Banker and Farmer	Iowa	53
39	Harris, Thomas	Montezuma	Poweshiek	Grain and Lumber	Massach'tts	47
87	Hart, William S.	Waukon	Allamakee	Lawyer	Iowa	35
54	Head, Mahlon	Jefferson	Greene	Banker	Ohio	48
69	Hetes, Phisip	North Buena Vista	Dubuque	Farmer	Iowa	43
29	Hollenbeak, R. W.	Casey	Adair	Farmer	Illinois	27
90	Hume, Thomas H.	St. Ansgar	Mitchell	Lumber and Coal	Iowa	35
88	Jacobson, Abraham	Decorah	Winneshiek	Farmer and Minister	Norway	53
58	Jepson, C. N.	Sioux City	Woodbury	Lawyer	Iowa	31
12	Jones, F. F.	Villisca	Montgomery	Banker and Merchant	New York	30
17	Kendall, N. E.	Albia	Monroe	Lawyer	Iowa	35
1	Kennedy, Chas. A	Montrose	Lee	Nurseryman	Iowa	34
32	Kling, H. B.	Woodbine	Harrison	Coal and Lumber	Wisconsin	26
41	Koonitz, Geo. W.	Iowa City	Johnson	Banker	Pennsylv'a	49
10	Laird, F. M.	Tabor	Fremont	Farmer	Iowa	48
81	Lamkin, C. B.	Inwood	Lyons, Osceola	Grain and Stock	New York	29
45	Langar, Raymond C.	Clinton	Clinton	Attorney	Iowa	30
44	Leech, Louis J.	West Branch	Cedar	Physician and Surgeon	Ohio	48
65	Lister, John	Conrad	Grundy	Farmer & Stockman	Illinois	33
61	Lowrey, Jason H.	Pomeroy	Calhoun	Banker and Real Estate	Illinois	35
50	Lund, J. F.	Berlin	Tama	Farmer	Germany	35
48	McAllister, John	Palo	Linn	Farmer and Stockman	Ireland	37
22	McClurkin, E. L.	Morning Sun	Louisa	Banker and Stockman	Iowa	46
4	McCreary, Wm. M.	Centerville	Appanoose	Merchant	W. Virginia	47
5	McCulloch, Geo.	Humeston	Wayne	Physician	Ohio	54
46	McDole, Albert E.	Sabula	Jackson	Farmer and Stockman	New York	50
58	McElrath, Wm. W.	Moville	Woodbury	Farmer	Ireland	23

REPRESENTATIVES- C (CONTINUED)

District	NAME	P. O. ADDRESS	COUNTIES IN DISTRICT	OCCUPATION	NATIVITY	Years in Iowa	Age
49	McNie, Malcolm F.	Vinton	Benton	Farmer and Banker	New Yo. k.	47	55
92	Maben, O. K.	Forest City	Hancock, Humboldt	Farmer	Iowa	35	35
16	Manning, Eli.	Chariton	Lucas	Coal Dealer	Illinois	33	57
31	Martin, Robert J.	Hancock	Pottawattamie	Merchant and Implements	Canada	32	40
60	Mattes, Joseph F.	Odebolt	Sac	Hardware Merchant	Iowa	48	48
79	Morris, James F.	Ireton	Stout	Farmer and Stockman	Illinois	48	49
34	Mott, D. C.	Audubon	Audubon	Editor and Publisher	Ohio	41	45
42	Nichols, J. I.	West Liberty	Muscatine	Farmer	Iowa	48	48
38	Offill, John F.	Prairie City	Jasper	Farmer and Stockman	Kentucky	40	59
91	Olson, H. L. †	Northwood	Winebago, Worth	Farmer	Norway	47	58
47	Pett, R. M.	Springville	Jones	Farmer	Iowa	48	48
85	Powers, P. H.	Powersville	Floyd	Farmer and Manufacturer	Canada	34	63
3	Prevost, J. J.	Bloomfield	Davis	Hardware Merchant	Indiana	65	67
75	Pritchard, J. S.	Belmond	Wright	Farmer	Michigan	47	56
21	Ritter, Henry	Burlington	Des Moines	Brick Manufacturer	Iowa	51	51
93	Robinson, B. F.	Armstrong	Dickinson, Emmet	Banker	Connecticut	33	53
6	Sanket, E. J.	Leon	Decatur	Real Estate and Loans	Pennsylv'a	54	60
72	Saylor, W. W.	Waverly	Bremer	Manager Lumber Yard	Pennsylv'a	43	44
71	Shaffer, J. D.	Elgin	Fayette	Farmer	Iowa	45	45
14	Skinner, Scott	Creston	Union	Real Estate and Insurance	Iowa	51	51
89	Spaulding, H. L.	Elma	Howard	Attorney	New Hamp	34	40
67	Spranger, L. F.	Independence	Ruchanan	Attorney	Pennsylv'a	24	51
84	Stanbery, John S.	Mason City	Cerro Gordo	Attorney	Ohio	48	57
43	Stoltenberg, A. H.	Mason City	Scott	Retired Farmer	Iowa	40	40
2	Summers, L. F.	Davenport	Van Buren	Physician and Surgeon	Missouri	32	54
37	Teachout, H. E.	Des Moines	Polk	Banker and Ice Dealer	New York	28	58
15	Temple, M. L.	Osceola	Clarke	Lawyer	W Virginia	30	55
26	Teter, Lorenzo D.	Knoxville	Marion	Lawyer	Iowa	33	33
11	Washburn, A. B.	Hastings	Mills	Farmer	Iowa	34	34
35	Weeks, Elbert W.	Guthrie Center	Guthrie	Attorney	Ohio	47	53

64	WELDEN, WM. *	Iowa Falls.	Hardin.	Merchant	Wisconsin.	35
57	Whiting, Will C.	Whiting.	Monona, Ida.	Lumber & Implement Dealer	Iowa.	46
80	Whitmer, G. K.	Primghar.	O'Brien.	Banker.	Iowa.	46
23	Willson, H. H.	Weilman.	Washington.	Farmer.	Iowa.	38
66	Wise, Charles A.	Cedar Falls.	Black Hawk.	Banker.	Germany.	49
62	Wright, Robert M.	Ft. Dodge.	Webster.	Lawyer.	England.	46
33	Wyland, O. P.	Harlan.	Shelby.	Real Estate.	Indiana.	56
						47
						48

Republicans in Roman—76. Democrats in Italic—22. Independent Republicans in Small Capitals—2.

* Republican in politics, elected on Citizens ticket. † Republican in politics, elected on Independent Republican ticket.

ADDITIONAL INFORMATION.

Former Legislative Service.—Bailey, H. 29; Bealer, H. 29; Buchanan, H. 28, 29; Calderwood, elected to fill vacancy in H. 28, 29; Carden, H. 29; Cassell, H. 29; Chassell, H. 28; Cheney, H. 29; Christianson, H. 29; Clarke, H. 28, 29; Coburn, H. 23, 29; Cololo, H. 29; Cummings, H. 29; Dashiell, H. 12, 8, 14, 15, 19, 20; Davie, H. 22, 23, 29; English, H. 29; Fiennikken, H. 29; Freeman, H. 29; Frudden, H. 29; Greene, H. 29; Head, H. 28, 29; Kendall, H. 28, 29; Kling, H. 29; Koonitz, H. 27, 28, 29; Langan, H. 29; Leech, H. 29; McClurkin, H. 29; McCulloch, H. 19; McNie, H. 29; Mattes, H. 29; Powers, H. 29; Pritchard, H. 29; Robinson, H. 29; Springer, 28, 29; Teachout, H. 29; Temple, H. 28, 29; Whiting, H. 29; Wise, H. 28, 29; Wright, H. 19.

Military Service.—Bealer, Corporal Co. A., 22d Iowa Inftry.; Cheney, 10th Vt. Inftry., 7th and 141 U. S. C. T. Major; Cobb, Corporal Co. F, 23th Iowa Inftry.; Dow, 83d and 44th Iowa Inftry.; Greeley, 151st New York; Hart, Private, 2d Lieut., 49th Iowa Inftry, S. A. W.; Head, 2d Lieut., Co. F., 10th Iowa Inftry.; Leech, Corporal Co. B, 2d Iowa Cav.; McAllister, Sergeant, 60th Ohio Inftry.; McCreary, 1st Lieut. Co. G., 36th Iowa Inftry.; Offill, Private, Co. A., 3d Iowa Cav.; Olson, Co. B., 32d Iowa Inftry.; Pritchard, Private, 2d Iowa Cav.; Sankey, Private 8d Iowa Vet. Vol. Cav.; Welden, Corporal, 48d Wisconsin.

Married, 89. Single, Chassell, Christianson, Kennedy, Langan, Springer, Teter—6. Widowers, Calderwood, Carstensen, Cassell, DeLano, Welden—5.

OFFICERS OF THE HOUSE.

Office.	Officer.	Post Office.	Occupation.	Nativity.	Age.	Years in Iowa.	Military Service.	Married or Single.	City Residence.
Speaker	Geo. W. Clarke	Adel	Lawyer	Indiana	51	47		Married	223 University Ave. Elliot.
Speaker pro tem	B. F. Cummings	Marshalltown	Lawyer	New York	59	59		Married	Victoria
Chief Clerk	C. K. Benedict	Shelby	Real Estate Dealer	Pennsylvania	50	23		Married	104 Eighth St.
Assistant Clerk	Leroy E. Corieth	Elkader	Lawyer	Iowa	28	23		Married	718 East Walnut.
Assistant Clerk	W. C. Rumm	Belmond	Editor & Publisher	Illinois	28	10		Single	133 1/2 East Walnut.
Engraving Clerk	Mrs. Mollie Heist	Allerton		Iowa	41	41		Widow	133 1/2 East Walnut.
Engraving Clerk	Walter P. McCulla	Cherokee	Lawyer	Iowa	27	27		Single	1821 East Grand Ave.
Asst. Postmistress	Hester Runyan	Odebolt	Milliner	Pennsylvania	80	25		Single	1234 Fifth St.
Sergeant-at-Arms	Col. S. A. Moore	Bloomfield	Retired Merchant	Indiana	82	42	45th Iowa Inf. ... } 2d Iowa Inf. ... }	Married	1017 East Walnut.
Journal Clerk	Harry E. Griffin	Maquoketa	Printer	Iowa	30	30		Married	1185 Seventh St.
Journal Clerk	L. H. Block	Hampson	Lawyer	Iowa	35	35		Single	1117 Twenty-sixth St.
Bill Clerk	L. M. Black	Wilton	Real Estate Dealer	Indiana	32	32		Married	1211 Lyon St.
Bill Clerk	F. J. Alexander	Winterset	Abstractor	Indiana	38	44	57th Indiana	Married	1334 East Grand Ave.
Bill Clerk	F. C. Hall	Woodward	Clerkman	New Jersey	50	10	5th Wisconsin	Married	1017 East Walnut.
Assistant File Clerk	Harry Breeding	Des Moines	Student	Iowa	15	15	7th Regt. U. S. Vols.	Single	1517 East Walnut
Speaker's Clerk	A. E. Brown	Osage	Attorney	Georgia	27	23		Single	753 East Locust.
Chief Doorkeeper	J. B. Lewis	Spencer	Retired	England	55	55		Married	Wellington.

STANDING COMMITTEES OF THE HOUSE.

WAYS AND MEANS.

Temple of Clarke,
Head of Greene,
English of Polk,
Cummings of Marshall,
Buchanan of Wapello,
Kendall of Monroe,
Carden of Henry,
Bealer of Linn,
Greene of Madison,
Freeman of Pottawattamie,
McClurkin of Louisa,
Flenniken of Clayton,
Cheney of Clay,
Kling of Harrison,
Pritchard of Wright,
Powers of Floyd,
Bailey of Ringgold,

Robinson of Emmet,
Croese of Page,
Stoltenberg of Scott,
Harris of Poweshiek,
Buckingham of Buena Vista,
Lamkin of Lyon,
Shaffer of Fayette,
Summers of Van Buren,
Mott of Audubon,
Carstensen of Clinton,
Cobb of Taylor,
Manning of Lucas,
Whiting of Monona,
Ritter of Des Moines,
Hakes of Pocahontas,
Geneva of Keokuk,
Laird of Fremont.

JUDICIARY.

Kendall of Monroe,
Temple of Clarke,
Cummings of Marshall,
Wright of Webster,
Jepson of Woodbury,
Hart of Allamakee,
Spaulding of Howard,
Teter of Marion,
Weeks of Guthrie,
Stanbery of Cerro Gordo,
Dow of Franklin,
Springer of Buchanan,

Langan of Clinton,
DeLano of Cass,
Clary of Chickasaw,
Teachout of Polk,
Greeley of Story,
Wise of Black Hawk,
Kling of Harrison,
Robinson of Emmet,
Chassell of Plymouth,
Hambleton of Mahaska,
Koontz of Johnson.

APPROPRIATIONS.

Mattes of Sac,
 Robinson of Emmet,
 Flenniken of Clayton,
 Head of Greene,
 Bealer of Linn,
 Buchanan of Wapello,
 Christianson of Hamilton,
 Leech of Cedar,
 Powers of Floyd,
 Chassell of Plymouth,
 Wright of Webster,
 Jones of Montgomery,
 Weeks of Guthrie,
 Manning of Lucas,
 McElrath of Woodbury,
 Bixby of Delaware,

Hanna of Kossuth,
 Maben of Hancock,
 Boland of Iowa,
 Stanbery of Cerro Gordo,
 Hume of Mitchell,
 Dashiell of Warren,
 Mott of Audubon,
 Hollembeak of Adair,
 McCulloch of Wayne,
 Gregory of Adams,
 Morris of Sioux,
 Jacobson of Winneshiek,
 Frudden of Dubuque,
 Colclo of Carroll,
 DeLano of Cass,
 Whitmer of O'Brien.

RAILROADS AND COMMERCE.

Wise of Black Hawk,
 Cummings of Marshall,
 Bealer of Linn,
 English of Polk,
 Calderwood of Scott,
 Christianson of Hamilton,
 Nichols of Muscatine,
 Greeley of Story,
 Pritchard of Wright,
 Coburn of Cherokee,
 McNie of Benton,
 Cassel of Jefferson,
 Welden of Hardin,
 Weeks of Guthrie,
 Hart of Allamakee,
 Lowrey of Calhoun,
 Martin of Pottawattamie,

Conn of Butler,
 Lister of Grundy,
 Jones of Montgomery,
 Doran of Boone,
 Skinner of Union,
 Hambleton of Mahaska,
 McCulloch of Wayne,
 McDole of Jackson,
 Kennedy of Lee,
 Washburn of Mills,
 Mattes of Sac,
 Manning of Lucas,
 Saylor of Bremer,
 Wyland of Shelby,
 Willson of Washington,
 Prevo of Davis,
 Lundt of Tama.

BANKS AND BANKING.

Head of Greene,
 Greeley of Story,
 Wise of Black Hawk,
 Teachout of Polk,
 McClurkin of Louisa,
 Calderwood of Scott,
 Robinson of Emmet,
 Freeman of Pottawattamie,
 Christianson of Hamilton,
 McNie of Benton,
 Greene of Madison,
 Cheney of Clay,
 Jones of Montgomery,
 Hanna of Kossuth,
 Jepson of Woodbury,

Lowrey of Calhoun,
 Crose of Page,
 Martin of Pottawattamie,
 Manning of Lucas,
 Harris of Poweshiek,
 Saylor of Bremer,
 Koontz of Johnson,
 Whiting of Monona,
 McCreary of Appanoose,
 Clary of Chickasaw,
 Whitmer of O'Brien,
 Sankey of Decatur,
 Hakes of Pocahontas,
 Prevo of Davis.

INSURANCE.

English of Polk,
 Temple of Clarke,
 Kendall of Monroe,
 Flenniken of Clayton,
 Bailey of Ringgold,
 Carden of Henry,
 Chassell of Plymouth,
 Robinson of Emmet,
 Lowrey of Calhoun,
 Stoltenberg of Scott,
 Welden of Hardin,
 McElrath of Woodbury,
 Teter of Marion,

Lister of Grundy,
 Skinner of Union,
 Morris of Sioux,
 Hollembeak of Adair,
 Boland of Iowa,
 McCulloch of Wayne,
 Springer of Buchanan,
 Whiting of Monona,
 Clary of Chickasaw,
 Geneva of Keokuk,
 Ritter of Des Moines,
 Heles of Dubuque.

AGRICULTURE.

Pritchard of Wright,
 Nichols of Muscatine,
 Bailey of Ringgold,
 Cassel of Jefferson,
 Robinson of Emmet,
 Buckingham of Buena Vista,
 Bixby of Delaware,
 Hollembeak of Adair,
 McAllister of Linn,
 McElrath of Woodbury,
 Stoltenberg of Scott,
 Lowrey of Calhoun,
 Lister of Grundy,
 Morris of Sioux,
 Shaffer of Fayette,
 Boland of Iowa,
 Maben of Hancock,

Doran of Boone,
 Cobb of Taylor,
 Conn of Butler,
 Ofill of Jasper,
 Washburn of Mills,
 McDole of Jackson,
 Jacobson of Winneshiek,
 Olson of Worth,
 Spaulding of Howard,
 Wright of Webster,
 Peet of Jones,
 Davie of Crawford,
 Heles of Dubuque,
 Willson of Washington,
 Laird of Fremont,
 Lundt of Tama.

SCHOOLS AND TEXT-BOOKS.

Jepson of Woodbury,
 Leech of Cedar,
 Powers of Floyd,
 Stanbery of Cerro Gordo,
 McAllister of Linn,
 Bixby of Delaware,
 Hambleton of Mahaska,
 Lamkin of Lyon,
 Teter of Marion,
 Dashiell of Warren,
 Gregory of Adams,

Cruse of Page,
 Harris of Poweshiek,
 Lister of Grundy,
 Kennedy of Lee,
 Colclo of Carroll,
 Langan of Clinton,
 Sankey of Decatur,
 Heles of Dubuque,
 Davie of Crawford,
 Lundt of Tama.

MINES AND MINING.

Teachout of Polk,
Kendall of Monroe,
Buchanan of Wapello,
Offill of Jasper,
Hambleton of Mahaska,
McElrath of Woodbury,
Spaulding of Howard,
Buckingham of Buena Vista,

Carstensen of Clinton,
Lamkin of Lyon,
McCreary of Appanoose,
Peet of Jones,
Ritter of Des Moines,
Laird of Freemont,
Davie of Crawford.

MUNICIPAL CORPORATIONS.

Buchanan of Wapello,
Teachout of Polk,
Bealer of Linn,
Carden of Henry,
Leech of Cedar,
Nichols of Muscatine,
McClurkin of Louisa,
Kling of Harrison,
Skinner of Union,
Wright of Webster,
Manning of Lucas,
McAllister of Linn,
Martin of Pottawattamie,
Jepson of Woodbury,
Saylor of Bremer,

Dow of Franklin,
Buckingham of Buena Vista,
Lister of Grundy,
McDole of Jackson,
Koontz of Johnson,
Langan of Clinton,
Frudden of Dubuque,
Springer of Buchanan,
Colclo of Carroll,
DeLano of Cass,
McCreary of Appanoose,
Peet of Jones,
Ritter of Des Moines,
Wyland of Shelby,
Laird of Fremont.

TELEGRAPH, TELEPHONE AND EXPRESS.

Coburn of Cherokee,
Mattes of Sac,
Greene of Madison,
Kendall of Monroe,
Christianson of Hamilton,
Pritchard of Wright,
Weeks of Guthrie,
Hart of Allamakee,
Stoltenberg of Scott,
Chassell of Plymouth,
McAllister of Linn,

Teter of Marion,
Welden of Hardin,
Martin of Pottawattamie,
Lowrey of Calhoun,
Buckingham of Buena Vista,
Maben of Hancock,
Morris of Sioux,
Boland of Iowa,
Whiting of Monona,
Clary of Chickasaw.

PARDONS.

Cummings of Marshall,
Teachout of Polk,
Nichols of Muscatine,
Kling of Harrison,
Jepson of Woodbury,
Weeks of Guthrie,
Hanna of Kossuth,
Maben of Hancock,
McCulloch of Wayne,
Morris of Sioux,

Skinner of Union,
Hume of Mitchell,
Harris of Poweshiek,
Dow of Franklin,
Springer of Buchanan,
Frudden of Dubuque,
Koontz of Johnson,
DeLano of Cass,
Ritter of Des Moines,
Wyland of Shelby.

LABOR.

Calderwood of Scott,
 Buchanan of Wapello,
 Cheney of Clay,
 Cummings of Marshall,
 Kendall of Monroe,
 Freeman of Pottawattamie,
 Bailey of Ringgold,
 Carstensen of Clinton,
 Spaulding of Howard,
 Stoltenberg of Scott,

Doran of Boone,
 Maben of Hancock,
 Offill of Jasper,
 Washburn of Mills,
 Saylor of Bremer,
 Olson of Worth,
 Whiting of Monona,
 McCreary of Appanoose,
 Ritter of Des Moines,
 Davie of Crawford.

ELECTIONS.

Flenniken of Clayton,
 Head of Greene,
 Greene of Madison,
 English of Polk,
 Kling of Harrison,
 Cummings of Marshall,
 Greeley of Story,
 Pritchard of Wright,

Freeman of Pottawattamie,
 Christianson of Hamilton,
 Leech of Cedar,
 Nichols of Muscatine,
 Mott of Audubon,
 Langan of Clinton,
 Clary of Chickasaw,
 Wyland of Shelby.

PUBLIC HEALTH.

Leech of Cedar,
 Dashiell of Warren,
 Gregory of Adams,
 McCulloch of Wayne,
 Summers of Van Buren,
 Kling of Harrison,
 Flenniken of Clayton,
 Spaulding of Howard,

Croze of Page,
 Bixby of Delaware,
 Mott of Audubon,
 McDole of Jackson,
 Lamkin of Lyon,
 Clary of Chickasaw,
 Heles of Dubuque,
 Peet of Jones.

ROADS AND HIGHWAYS.

Bailey of Ringgold,
 Coburn of Cherokee,
 Cassel of Jefferson,
 Powers of Floyd,
 Cheney of Clay,
 Head of Jefferson,
 Christianson of Hamilton,
 Weeks of Guthrie,
 Hart of Allamakee,
 Carstensen of Clinton,
 McAllister of Linn,
 Morris of Sioux,
 Cobb of Taylor,
 Kennedy of Lee,

Doran of Boone,
 Conn of Butler,
 Shaffer of Fayette,
 Lister of Grundy,
 Jacobson of Winneshiek,
 Colclo of Carroll,
 Whitmer of O'Brien,
 Peet of Jones,
 Geneva of Keokuk,
 Laird of Fremont,
 Davie of Crawford,
 Lundt of Tama,
 Hakes of Pocahontas,
 Heles of Dubuque.

PUBLIC LANDS AND BUILDINGS.

Greeley of Story,
Calderwood of Scott,
Wise of Black Hawk,
Croze of Page,
Dashiell of Warren,
Boland of Iowa,
Conn of Butler,

Carstensen of Clinton,
Shaffer of Fayette,
Saylor of Bremer,
Willson of Washington,
Sankey of Decatur,
Whitmer of O'Brien.

SUPPRESSION OF INTemperance.

Harris of Poweshiek,
Buchanan of Wapello,
Greeley of Story,
Leech of Cedar,
McClurkin of Louisa,
Pritchard of Wright,
Wright of Webster,
Chassell of Plymouth,
Jones of Montgomery,
Stanbery of Cerro Gordo,

Conn of Butler,
Shaffer of Fayette,
Cobb of Taylor,
Jacobson of Wneshiek,
McAllister of Linn,
Koonitz of Johnson,
Prevo of Davis,
Hakes of Pocahontas,
Lundt of Tama.

CONSTITUTIONAL AMENDMENTS.

Wright of Webster,
Temple of Clarke,
Mattes of Sac,
English of Polk,
Head of Greene,
Flenniken of Clayton,
Kling of Harrison,
Bealer of Linn,
Cassel of Jefferson,

Dashiell of Warren,
Hambleton of Mahaska,
Manning of Lucas,
Lowrey of Calhoun,
Maben of Hancock,
Colclo of Carroll,
Whiting of Monona,
Springer of Buchanan,
Langan of Clinton.

PUBLIC LIBRARIES.

Koontz of Johnson,
Wise of Black Hawk,
Temple of Clarke,
Summers of Van Buren,
Jepson of Woodbury,
Hollembek of Adair,
Spaulding of Howard,

Boland of Iowa,
Saylor of Bremer,
McDole of Jackson,
McCreary of Appanoose,
Ritter of Des Moines,
Sankey of Decatur.

PRINTING.

Chassell of Plymouth,
English of Polk,
Kling of Harrison,
McNie of Benton,
Pritchard of Wright,
Carden of Henry,
Leech of Cedar,
Teachout of Polk,
Coburn of Cherokee,

McClurkin of Louisa,
Mott of Audubon,
Croze of Page,
Summers of Van Buren,
Dow of Franklin,
Gregory of Adams,
Skinner of Union,
Colclo of Carroll,
Springer of Buchanan,

STATE UNIVERSITY.

Carden of Henry,
Koontz of Johnson,
Greene of Madison,
Christianson of Hamilton,
Spaulding of Howard,
Gregory of Adams,
Hanna of Kossuth,

Boland of Iowa,
Saylor of Bremer,
Bixby of Delaware,
Hume of Mitchell,
Whiting of Monona,
Whitmer of O'Brien,

AGRICULTURAL COLLEGE.

McClurkin of Louisa,
Greeley of Story,
Bailey of Ringgold,
Hart of Allamakee,
Welden of Hardin,
Manning of Lucas,
Martin of Pottawattamie,

Offill of Jasper,
Lamkin of Lyon,
McCulloch of Wayne,
Olson of Worth,
Frudden of Dubuque,
Hakes of Pocahontas,
Harris of Poweshiek.

COMPENSATION OF PUBLIC OFFICERS.

Bealer of Linn,
Calderwood of Scott,
Freeman of Pottawattamie,
Manning of Lucas,
McDole of Jackson,
Hume of Mitchell,
Skinner of Union,
Hanna of Kossuth,

Carstensen of Clinton,
Washburn of Mills,
Summers of Van Buren,
Frudden of Dubuque,
DeLano of Cass,
Prevo of Davis,
Laird of Fremont.

CLAIMS.

McNie of Benton,
Buchanan of Wapello,
Cheney of Clay,
Teter of Marion,
Washburn of Mills,
Maben of Hancock,
Lister of Grundy,

Morris of Sioux,
Olson of Worth,
Hakes of Pocahontas,
Davie of Crawford,
Willson of Washington,
Whitmer of O'Brien.

NORMAL SCHOOLS.

Robinson of Emmet,
Wise of Black Hawk,
Mattes of Sac,
Harris of Poweshiek,
Dow of Franklin,
Hollembek of Adair,
Skinner of Union,

Shaffer of Fayette,
Hambleton of Mahaska,
Conn of Butler,
Jacobson of Winneshiek,
Geneva of Keokuk,
McCreary of Appanoose.

PRIVATE CORPORATIONS.

Christianson of Hamilton,
 Mattes of Sac,
 Bailey of Ringgold,
 Greene of Madison,
 McAllister of Liun,
 Stanbery of Cerro Gordo,

Harris of Poweshiek,
 Stoltenberg of Scott,
 Dashiell of Warren,
 Summers of Van Buren,
 Clary of Chickasaw,
 Geneva of Keokuk.

DOMESTIC MANUFACTURES.

Powers of Floyd,
 Cheney of Clay,
 Stoltenberg of Scott,
 Welden of Hardin,
 Stanbery of Cerro Gordo,
 Carstensen of Clinton,
 McElrath of Woodbury,

Lister of Grundy,
 Kennedy of Lee,
 Washburn of Mills,
 Prevo of Davis,
 Sankey of Decatur,
 Heles of Dubuque.

HORTICULTURE.

Hollembeak of Adair,
 Calderwood of Scott,
 Cassell of Jefferson,
 Shaffer of Fayette,
 Conn of Butler,

Kennedy of Lee,
 Washburn of Mills,
 Willson of Washington,
 Geneva of Keokuk,
 Peet of Jones.

PHARMACY.

Dashiell of Warren,
 Gregory of Adams,
 Nichols of Muscatine,
 Kendall of Monroe,
 Coburn of Cherokee,
 Leech of Cedar,
 Flenniken of Clayton,
 Robinson of Emmet,

McClurkin of Louisa,
 Lowrey of Calhoun,
 Doran of Boone,
 Maben of Hancock,
 Buckingham of Buena Vista
 Morris of Sioux,
 McDole of Jackson.
 Wyland of Shelby.

BUILDING AND LOAN.

Kling of Harrison,
 Powers of Floyd,
 Cassel of Jefferson,
 Teter of Marion,
 Stoltenberg of Scott,

Manning of Lucas,
 Lowrey of Calhoun,
 Whiting of Monona,
 Wyland of Shelby.

FEDERAL RELATIONS.

Weeks of Guthrie,
 Temple of Clarke,
 Wise of Black Hawk,
 Wright of Webster,
 Crose of Page,

Jones of Montgomery,
 Mott of Audubon,
 Frudden of Dubuque,
 Sankey of Decatur.

WOMAN SUFFRAGE.

Cheney of Clay,	Weeks of Guthrie,
Coburn of Cherokee,	Boland of Iowa,
Greene of Madison,	Cobb of Taylor,
Powers of Floyd,	Wyland of Shelby,
Nichols of Muscatine,	Laird of Fremont,
Morris of Sioux,	Heles of Dubuque.

HOSPITAL FOR INSANE.

Springer of Buchanan,	Gregory of Adams,
Carden of Henry,	Doran of Boone,
Coburn of Cherokee,	Hume of Mitchell,
Croose of Page,	Frudden of Dubuque,
Christianson of Hamilton,	DeLano of Cass.

INSTITUTE FOR FEEBLE-MINDED.

Washburn of Mills,	McCulloch of Wayne,
Bailey of Ringgold,	Lamkin of Lyon,
Teter of Marion,	Sankey of Decatur,
Summers of Van Buren,	Wyland of Shelby.

INSTITUTE FOR DEAF.

Martin of Pottawattamie,	Geneva of Keokuk,
Powers of Floyd,	DeLano of Cass,
Bealer of Linn,	Whitmer of O'Brien,
Wright of Webster,	Prevo of Davis.
McAllister of Linn,	

COLLEGE FOR THE BLIND.

Shaffer of Fayette,	Carstensen of Clinton,
McNie of Benton,	Whiting of Monona,
Dow of Franklin,	Willson of Washington,
Hanna of Kossuth,	Laird of Fremont.

INDUSTRIAL SCHOOLS.

Mott of Audubon,	Jones of Montgomery,
Teachout of Polk,	Cobb of Taylor,
Freeman of Pottawattamie,	Langan of Clinton,
Welden of Hardin,	Lundt of Tama.

SOLDIERS' AND ORPHANS' HOME.

Nichols of Muscatine,	Offill of Jasper,
Cummings of Marshall,	Olson of Worth,
Calderwood of Scott,	Clary of Chickasaw,
Cobb of Taylor,	Davis of Crawford.

PENITENTIARIES.

Jones of Montgomery,	Offill of Jasper,
Temple of Clarke,	Olson of Worth,
Teter of Marion,	Jacobson of Winneshiek,
Bixby of Delaware,	Prevo of Davis,
Kennedy of Lee,	Peet of Jones.

ANIMAL INDUSTRY.

Doran of Boone,
Cassel of Jefferson,
Buckingham of Buena Vista,
McElrath of Woodbury,
Lamkin of Lyon,

Bixby of Delaware,
Offill of Jasper,
Peet of Jones,
Davie of Crawford,
Lundt of Tama.

MILITARY.

Hart of Allamakee,
Head of Greene,
Cheney of Clay,
Greeley of Story,
Leech of Cedar,
Bealer of Linn,
Pritchard of Wright,
McAllister of Linn,

Dow of Franklin,
Welden of Hardin,
Offill of Jasper,
Olson of Worth,
Cobb of Taylor,
Sankey of Decatur,
McCreary of Appanoose

POLICE REGULATIONS.

Skinner of Union,
Teachout of Polk,
Buchanan of Wapello,
Freeman of Pottawattamie,
Stanbery of Cerro Gordo,

McElrath of Woodbury,
McCulloch of Wayne,
Carstensen of Clinton,
Koontz of Johnson,
Prevo of Davis.

FISH AND GAME.

Hanna of Kossuth,
Cummings of Marshall,
Mattes of Sac,
Coburn of Cherokee,
Hart of Allamakee,
McDole of Jackson,

Jacobson of Winneshiek,
Kennedy of Lee,
Bixby of Delaware,
Buckingham of Buena Vista,
Springer of Buchanan,
Colclo of Carroll.

ENROLLED BILLS.

Spaulding of Howard,
Flenniken of Clayton,
Calderwood of Scott,
Carden of Henry,
Jepson of Woodbury,

Bixby of Delaware,
Martin of Pottawattamie,
Frudden of Dubuque,
Willson of Washington.

COUNTY AND TOWNSHIP ORGANIZATION.

Cassel of Jefferson,
McNie of Benton,
Hollembek of Adair,
Hanna of Kossuth,
Kennedy of Lee,

Shaffer of Fayette,
Conn of Butler,
Olson of Worth,
Davie of Crawford,
Heles of Dubuque.

PUBLIC CHARITIES.

Freeman of Pottawattamie,
McNie of Benton,
Stoltenberg of Scott,
Saylor of Bremer,
Jones of Montgomery,

Hanna of Kossuth,
Hume of Mitchell,
Summers of Van Buren,
Hambleton of Mahaska,
Whitmer of O'Brien.

SENATORIAL DISTRICTS.

Teter of Marion,
Nichols of Muscatine,
Buchanan of Wapello,
Mattes of Sac,
McElrath of Woodbury,
Doran of Boone,
Jacobson of Winneshiek,

Harris of Poweshiek,
McCulloch of Wayne,
Summers of Van Buren,
Colclo of Carroll,
Geneva of Keokuk,
Hakes of Pocahontas.

REPRESENTATIVE DISTRICTS.

Maben of Hancock,
English of Polk,
Flenniken of Clayton,
Stanbery of Cerro Gordo,
Mott of Audubon,
Martin of Pottawattamie,
Jepson of Woodbury,
Manning of Lucas,

Lamkin of Lyon,
Hollembek of Adair,
Whiting of Monona,
Ritter of Des Moines,
Lundt of Tama,
Wyland of Shelby,
Peet of Jones.

CONGRESSIONAL DISTRICTS.

Greene of Madison,
McClurkin of Louisa,
Greeley of Story,
Welden of Hardin,
Wright of Webster,
Dashiell of Warren,
Ohasell of Plymouth,
Hart of Allamakee,

Hume of Mitchell,
Hanna of Kossuth,
Dow of Franklin,
Olson of Worth,
Jones of Montgomery,
McDole of Jackson,
McCreary of Appanoose.

JUDICIAL DISTRICTS.

Kennedy of Lee,
Temple of Clarke,
Bealer of Linn,
Cummings of Marshall,
Carden of Henry,
Freeman of Pottawattamie,
Head of Green,

McNie of Benton,
Gregory of Adams,
Offill of Jasper,
Laird of Fremont,
DeLano of Cass,
Willson of Washington

ENGROSSED BILLS.

Lamkin of Lyon,
English of Polk,
Robinson of Emmet,
Wise of Black Hawk,

Saylor of Bremer,
Langan of Clinton,
Prevo of Davis.

RULES.

Langan of Clinton,
Temple of Clarke,
Kendall of Monroe,
English of Polk,

Chassell of Plymouth,
Koontz of Johnson,
Springer of Buchanan
Mr. Speaker.

REPRESENTATIVES AND THEIR RESPECTIVE COMMITTEES.

BAILEY.

Roads and Highways—Chairman, Ways and Means, Private Corporations, Labor,	Insurance, Agriculture, Institute for Feeble-Minded, Agricultural College.
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BEALER.

Compensation of Public Officers— Chairman, Ways and Means, Appropriations, Railroads and Commerce,	Municipal Corporations, Constitutional Amendments, Military, Institute for Deaf, Judicial Districts.
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BIXBY.

Appropriations, Public Health, State University, Agriculture, Enrolled Bills,	Schools and Text-Books, Animal Industry, Penitentiaries, Fish and Game.
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BOLAND.

Appropriations, Woman Suffrage, State University, Agriculture,	Public Libraries, Insurance, Public Lands and Buildings, Telegraph, Telephone and Express.
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BUCHANAN.

Municipal Corporations—Chairman, Ways and Means, Appropriations, Suppression of Intemperance, Labor,	Senatorial Districts, Mines and Mining, Police Regulations, Claims.
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BUCKINGHAM.

Ways and Means, Municipal Corporations, Mines and Mining, Pharmacy,	Agriculture, Animal Industry, Telegraph, Telephone and Express Fish and Game.
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CALDERWOOD.

Labor—Chairman,
Railroads and Commerce,
Banks and Banking,
Compensation of Public Officers,

Enrolled Bills,
Public Lands and Buildings.
Horticulture,
Soldiers' and Orphans' Home.

CARDEN.

State University—Chairman,
Ways and Means,
Municipal Corporations,
Printing,

Insurance,
Enrolled Bills,
Hospital for Insane,
Judicial Districts.

CARSTENSEN.

Ways and Means,
Labor,
Compensation of Public Officers,
Mines and Mining,
Domestic Manufactures,

Roads and Highways,
Police Regulations,
College for the Blind,
Public Lands and Buildings.

CASSEL.

County and Township Organiza-
tion—Chairman,
Railroads and Commerce,
Constitutional Amendments,
Agriculture,

Building and Loan,
Roads and Highways,
Animal Industry,
Horticulture.

CHASSELL.

Printing—Chairman,
Judiciary,
Appropriations,
Suppression of Intemperance,

Congressional Districts,
Insurance,
Telegraph, Telephone and Express,
Rules.

CHENEY.

Woman Suffrage—Chairman,
Ways and Means,
Banks and Banking,
Labor,

Claims,
Domestic Manufactures,
Roads and Highways,
Military.

CHRISTIANSON.

Private Corporations—Chairman,
Appropriations,
Railroads and Commerce,
Banks and Banking,
Elections,

State University,
Roads and Highways,
Telegraph, Telephone and Express,
Hospital for Insane.

CLARY.

Judiciary,
Banks and Banking,
Private Corporations,
Elections,

Public Health,
Insurance,
Telegraph, Telephone and Express,
Soldiers' and Orphans' Home.

COBB.

Ways and Means,
 Suppression of Intemperance,
 Woman Suffrage,
 Agriculture,

Roads and Highways,
 Industrial Schools,
 Military,
 Soldiers' and Orphans' Home.

COBURN.

Railroads and Commerce,
 Hospital for Insane,
 Printing,
 Pharmacy,

Woman Suffrage,
 Roads and Highways,
 Telegraph, Telephone and Express,
 Fish and Game.

COLCLO.

Appropriations,
 Municipal Corporations,
 Printing,
 Senatorial Districts,

Fish and Game,
 Constitutional Amendments,
 Schools and Text-Books,
 Roads and Highways.

CONN.

Railroads and Commerce,
 Suppression of Intemperance,
 Agriculture,
 County and Township Organization,

Roads and Highways,
 Normal Schools,
 Public Lands and Buildings,
 Horticulture.

CROSE.

Ways and Means,
 Printing,
 Banks and Banking,
 Public Health,

Hospital for Insane,
 Schools and Text-Books,
 Public Lands and Buildings,
 Federal Relations.

CUMMINGS.

Pardons—Chairman,
 Ways and Means,
 Judiciary,
 Railroads and Commerce,
 Labor,

Elections,
 Soldiers' and Orphans' Home,
 Fish and Game,
 Judicial Districts.

DASHIELL.

Pharmacy—Chairman,
 Appropriations,
 Private Corporations,
 Congressional Districts,

Public Lands and Buildings,
 Constitutional Amendments,
 Public Health,
 Schools and Text-Books.

DAVIE.

Labor,
 Schools and Text-Books,
 Claims,
 Mines and Mining,
 Agriculture,

County and Township Organization,
 Roads and Highways,
 Animal Industry,
 Soldiers' and Orphans' Home.

DELANO.

Judiciary,
Appropriations,
Municipal Corporations,
Compensation of Public Officers,

Pardons,
Hospital for Insane,
Institute for Deaf,
Judicial Districts.

DORAN.

Animal Industry—Chairman,
Railroads and Commerce,
Labor,
Senatorial Districts,

Pharmacy,
Agriculture,
Roads and Highways,
Hospital for Insane.

DOW.

Judiciary,
Municipal Corporations,
Printing,
Congressional Districts,

Pardons,
Normal Schools,
Military,
College for the Blind.

ENGLISH.

Insurance—Chairman,
Ways and Means,
Railroads and Commerce,
Printing,
Elections,

Representative Districts,
Constitutional Amendments,
Engrossed Bills,
Rules.

FLENNIKEN.

Elections—Chairman,
Ways and Means,
Appropriations,
Representative Districts,
Public Health,

Pharmacy,
Insurance,
Enrolled Bills,
Constitutional Amendments.

FREEMAN.

Public Charities—Chairman,
Ways and Means,
Labor,
Compensation of Public Officers,
Elections,

Banks and Banking,
Industrial Schools,
Police Regulations,
Judicial Districts.

FRUDDEN.

Appropriations,
Municipal Corporations,
Compensation of Public Officers,
Pardons,

Enrolled Bills,
Hospital for Insane,
Federal Relations,
Agricultural College.

GENEVA.

Ways and Means,
Private Corporations,
Senatorial Districts,
Insurance,

Roads and Highways,
Normal Schools,
Horticulture,
Institute for Deaf.

GEELEY.

Public Lands and Buildings—
Chairman,
Judiciary,
Railroads and Commerce,
Banks and Banking,

Suppression of Intemperance,
Elections,
Congressional Districts,
Military,
Agricultural College.

GREENE.

Congressional Districts—Chairman,
Ways and Means,
Banks and Banking,
Elections,

Woman Suffrage,
State University,
Telegraph, Telephone and Express,
Private Corporations.

GREGORY.

Appropriations,
Printing,
Public Health,
Pharmacy,

State University,
Schools and Text-Books,
Hospital for Insane,
Judicial Districts.

HAKES.

Ways and Means,
Banks and Banking,
Claims,
Suppression of Intemperance,

Senatorial Districts,
Roads and Highways,
Normal Schools,
Agricultural College.

HAMBLETON.

Judiciary,
Railroads and Commerce,
Mines and Mining,
Schools and Text-Books,

Public Charities,
Constitutional Amendments,
Normal Schools.

HANNA.

Fish and Game—Chairman,
Appropriations,
Banks and Banking,
Compensation of Public Officers,
Congressional Districts,

State University,
Pardons,
Public Charities,
College for the Blind.

HARRIS.

Suppression of Intemperance—
Chairman,
Ways and Means,
Banks and Banking,
Private Corporations,

Agricultural College,
Senatorial Districts,
Pardons,
Schools and Text-Books,
Normal Schools.

HART.

Military—Chairman,
Judiciary,
Railroads and Commerce,
Congressional Districts,

Roads and Highways,
Telegraph, Telephone and Express,
Fish and Game,
Agricultural College.

HEAD.

Bank and Banking—Chairman,
Ways and Means,
Appropriations,
Elections,

Constitutional Amendments,
Roads and Highways,
Military,
Judicial Districts.

HELES.

Public Health,
Woman Suffrage,
Agriculture,
Insurance,

Domestic Manufactures,
County and Township Organization,
Roads and Highways,
Schools and Text-Books.

HOLLEMBEAK.

Horticulture—Chairman,
Appropriations,
Representative Districts,
Agriculture,
Woman Suffrage,

Public Libraries,
Insurance,
County and Township Organization,
Normal Schools.

HUME.

Appropriations,
Compensation of Public Officers,
Congressional Districts,
State University,

Pardons,
County and Township Organization,
Public Charities,
Hospital for Insane.

JACOBSON.

Appropriations,
Suppression of Intemperance,
Senatorial Districts,
Agriculture,

Roads and Highways,
Normal Schools,
Penitentiaries,
Fish and Game.

JEPSON.

Schools and Text-Books—Chairman,
Judiciary,
Municipal Corporations.
Banks and Banking,

Representative Districts,
Public Libraries,
Pardons,
Enrolled Bills.

JONES.

Penitentiaries—Chairman,
Railroads and Commerce,
Suppression of Intemperance,
Industrial Schools,
Federal Relations,

Appropriations,
Banks and Banking,
Congressional Districts,
Public Charities.

KENDALL.

Judiciary—Chairman,
Mines and Mining,
Insurance,
Rules,

Ways and Means,
Labor,
Pharmacy,
Telegraph, Telephone and Express.

KENNEDY.

Judicial Districts—Chairman,
County and Township Organization,
Penitentiaries,
Fish and Game,
Railroads and Commerce,

Domestic Manufactures,
Schools and Text-Books,
Roads and Highways,
Horticulture.

KLING.

Building and Loan—Chairman,
Public Health,
Pardons,
Printing,
Constitutional Amendments,

Ways and Means,
Judiciary,
Municipal Corporations,
Elections.

KOONTZ.

Public Libraries—Chairman,
Judiciary,
Municipal Corporations,
Banks and Banking,
Suppression of Intemperance,

State University,
Pardons,
Police Regulations,
Rules.

LAIRD.

Ways and Means,
Compensation of Public Officers,
Mines and Mining,
Woman Suffrage,
Agriculture,

Roads and Highways,
College for Blind,
Judicial Districts,
Municipal Corporations.

LAMKIN.

Engrossed Bills—Chairman,
Ways and Means,
Representative Districts,
Public Health,

Schools and Text-Books,
Animal Industry,
Institute for Feeble-Minded,
Agricultural College.

LANGAN.

Rules—Chairman,
Judiciary,
Municipal Corporations,
Elections,

Constitutional Amendments,
Schools and Text-Books,
Industrial Schools,
Engrossed Bills.

LEECH.

Public Health—Chairman,
Suppression of Intemperance,
Elections,
Schools and Text-Books,
Appropriations,

Municipal Corporations,
Printing,
Pharmacy,
Military.

LISTER.

Railroads and Commerce,
Claims,
Agriculture,
Domestic Manufactures,

Roads and Highways,
Municipal Corporations,
Insurance,
Schools and Text-Books.

LOWREY.

Railroads and Commerce, Constitutional Amendments, Insurance, Telegraph, Telephone and Express,	Banks and Banking, Pharmacy, Agriculture, Building and Loan.
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LUNDT.

Railroads and Commerce, Representative Districts, Schools and Text-Books, Animal Industry,	Suppression of Intemperance, Agriculture, Roads and Highways, Industrial Schools.
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MCALLISTER.

Roads and Highways, Private Corporations, Suppression of Intemperance, Agriculture, Schools and Text-Books,	Municipal Corporations, Military, Institute for Deaf, Telegraph, Telephone and Express.
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MCCLURKIN.

Agricultural College—Chairman, Ways and Means, Municipal Corporations, Banks and Banking,	Suppression of Intemperance, Printing, Congressional Districts, Pharmacy.
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MCCREARY.

Municipal Corporation, Banks and Banking, Labor, Congressional Districts,	Mines and Mining, Public Libraries, Normal Schools. Military.
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MCCULLOCH.

Appropriations, Senatorial Districts, Public Health, Pardons, Insurance,	Police Regulations, Institute for Feeble-Minded, Railroads and Commerce, Agricultural College.
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MCDOLE.

Railroads and Commerce, Municipal Corporations, Compensation of Public Officers, Congressional Districts, Public Health,	Pharmacy, Agriculture, Public Library, Fish and Game.
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MCELRATH.

Appropriations, Senatorial Districts, Mines and Mining, Agriculture,	Insurance, Domestic Manufactures, Animal Industry, Police Regulations.
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MCNIE.

Claims—Chairman,
Railroads and Commerce,
Banks and Banking,
Printing,

Public Charities,
College for Blind,
Judicial Districts,
County and Township Organization.

MABEN.

Representative Districts—Chairman,
Labor,
Claims,
Constitutional Amendments,

Pharmacy,
Agriculture,
Pardons,
Telegraph, Telephone and Express.

MANNING.

Appropriations,
Municipal Corporations,
Banks and Banking,
Compensation of Public Officers,
Railroads and Commerce,

Ways and Means,
Representative Districts,
Constitutional Amendments,
Agricultural College,
Building and Loan.

MARTIN.

Institute for the Deaf—Chairman,
Railroads and Commerce,
Municipal Corporations,
Banks and Banking,

Representative Districts,
Telegraph, Telephone and Express,
Agricultural College,
Enrolled Bills.

MATTES.

Appropriations—Chairman,
Railroads and Commerce,
Private Corporations,
Constitutional Amendments,
Senatorial Districts,

Normal School,
Telegraph, Telephone and Express,
Fish and Game,
Railroads and Commerce.

MORRIS.

Appropriations,
Claims,
Pharmacy,
Woman Suffrage,
Agriculture,

Pardons,
Insurance,
Roads and Highways,
Telegraph, Telephone and Express.

MOTT.

Industrial Schools—Chairman,
Ways and Means,
Appropriations,
Public Health,

Printing,
Elections,
Representative Districts,
Federal Relations.

NICHOLS.

Soldiers' and Orphans' Home—
Chairman,
Railroads and Commerce,
Municipal Corporations,
Elections,

Senatorial Districts,
Pharmacy,
Woman Suffrage,
Agriculture,
Pardons.

OFFILL.

Agricultural College,
Labor,
Mines and Mining,
Agriculture,
Animal Industry,

Penitentiaries,
Military,
Soldiers' and Orphans' Home,
Judicial Districts.

OLSON.

Labor,
Claims,
Congressional Districts,
Agriculture,
Penitentiaries,

County and Township
Organization,
Military,
Soldiers' and Orphans' Home,
Agricultural College.

PEET.

Municipal Corporations,
Representative Districts,
Mines and Mining,
Public Health,
Agriculture,

Animal Industry,
Penitentiaries,
Horticulture,
Roads and Highways.

POWERS.

Domestic Manufactures—
Chairman,
Ways and Means,
Appropriations,
Woman Suffrage,

Building and Loan,
Schools and Text-Books,
Roads and Highways,
Institute for Deaf.

PREVO.

Railroads and Commerce,
Banks and Banking,
Compensation of Public Officers,
Suppression of Intemperance,
Domestic Manufactures,

Penitentiaries,
Police Regulations,
Institute for Deaf.
Engrossed Bills.

PRITCHARD.

Agriculture—Chairman,
Ways and Means,
Railroads and Commerce,
Suppression of Intemperance,

Printing,
Elections,
Telegraph, Telephone and Express,
Military.

RITTER.

Ways and Means,
Labor,
Representative Districts,
Mines and Mining,

Public Libraries,
Pardons,
Municipal Corporations,
Insurance.

ROBINSON.

Normal Schools—Chairman,
Ways and Means,
Judiciary,
Appropriations,
Banks and Banking,

Pharmacy,
Agriculture,
Engrossed Bills,
Insurance.

SANKKEY.

Banks and Banking,
Public Libraries,
Domestic Manufactures,
Schools and Text-Books,

Public Lands and Buildings,
Military,
Institute for Feeble-Minded,
Federal Relations.

SAYLOR.

Banks and Banking,
Municipal Corporations,
Labor,
Railroads and Commerce,
State University,

Public Libraries,
Public Lands and Buildings,
Public Charities,
Engrossed Bills.

SHAFFER.

College for Blind—Chairman,
Ways and Means,
Suppression of Intemperance,
Agriculture,
Roads and Highways,

County and Township
Organization,
Normal Schools,
Public Lands and Buildings,
Horticulture.

SKINNER.

Police Regulations—Chairman,
Railroads and Commerce,
Municipal Corporations,
Compensation of Public Officers,

Printing,
Pardons,
Insurance,
Normal Schools.

SPAULDING.

Enrolled Bills—Chairman,
Judiciary,
Labor,
Mines and Mining,

Public Health,
State University,
Agriculture,
Public Libraries.

SPRINGER.

Hospital for Insane—Chairman,
Judiciary,
Municipal Corporations,
Printing,
Constitutional Amendments,

Pardons,
Insurance,
Fish and Game,
Rules.

STANBERRY.

Judiciary,
Appropriations,
Private Corporations,
Suppression of Intemperance,

Representative Districts,
Domestic Manufactures,
Schools and Text-Books,
Police Regulations.

STOLTENBERG.

Ways and Means,
Labor,
Agriculture,
Insurance,
Building and Loan,

Domestic Manufactures,
Telegraph, Telephone and Express,
Public Charities,
Private Corporations.

SUMMERS.

Ways and Means,
Printing,
Private Corporations,
Compensation of Public Officers,
Senatorial Districts,

Public Health,
Public Libraries,
Public Charities,
Institute for Feeble-Minded.

TEACHOUT.

Mines and Mining—Chairman,
Judiciary,
Municipal Corporations,
Banks and Banking,

Pardons,
Industrial Schools,
Police Regulations,
Printing.

TEMPLE.

Ways and Means—Chairman,
Judiciary,
Insurance,
Constitutional Amendments,
Public Libraries,

Penitentiaries,
Federal Relations,
Judicial Districts,
Rules.

TETER.

Senatorial Districts—Chairman,
Judiciary,
Claims,
Insurance,
Schools and Text-Books,

Penitentiaries,
Telegraph, Telephone and Express,
Institute for Feeble-Minded,
Building and Loan.

WASHBURN.

Institute for Feeble-Minded—Chair-
man,
Horticulture,
Labor,
Claims,

Compensation of Public Officers,
Agriculture,
Domestic Manufactures,
Railroads and Commerce.

WEEKS.

Federal Relations—Chairman,
Judiciary,
Appropriations,
Railroads and Commerce,

Woman Suffrage,
Pardons,
Roads and Highways,
Telegraph, Telephone and Express.

WELDEN.

Railroads and Commerce,
Congressional Districts,
Insurance,
Domestic Manufactures,

Telegraph, Telephone and Express,
Industrial Schools,
Military,
Agricultural College.

WHITING.

Ways and Means,
Banks and Banking,
Labor,
Insurance,
Constitutional Amendments,

Representative Districts,
State University,
Building and Loan,
Telegraph, Telephone and Express,
College for the Blind.

WHITMER.

Appropriations,
Banks and Banking,
Claims,
State University,

Roads and Highways,
Public Charities,
Institute for Deaf,
Public Lands and Buildings.

WILLSON.

Railroads and Commerce,
Claims,
Agriculture,
Enrolled Bills,

Public Lands and Buildings,
Horticulture,
College for the Blind,
Judicial Districts.

WISE.

Railroads and Commerce—Chair-
man,
Judiciary,
Banks and Banking,
Public Libraries,

Normal Schools,
Federal Relations,
Engrossed Bills,
Public Lands and Buildings.

WRIGHT.

Constitutional Amendments—
Chairman,
Judiciary,
Appropriations,
Municipal Corporations,

Suppression of Intemperance,
Congressional Districts,
Federal Relations,
Institute for Deaf,
Agriculture.

WYLAND.

Railroads and Commerce,
Municipal Corporations,
Elections,
Representative Districts,
Pharmacy,

Woman Suffrage,
Pardons,
Building and Loan,
Institute for Feeble-Minded,
Claims.

SPEAKER.

Rules.

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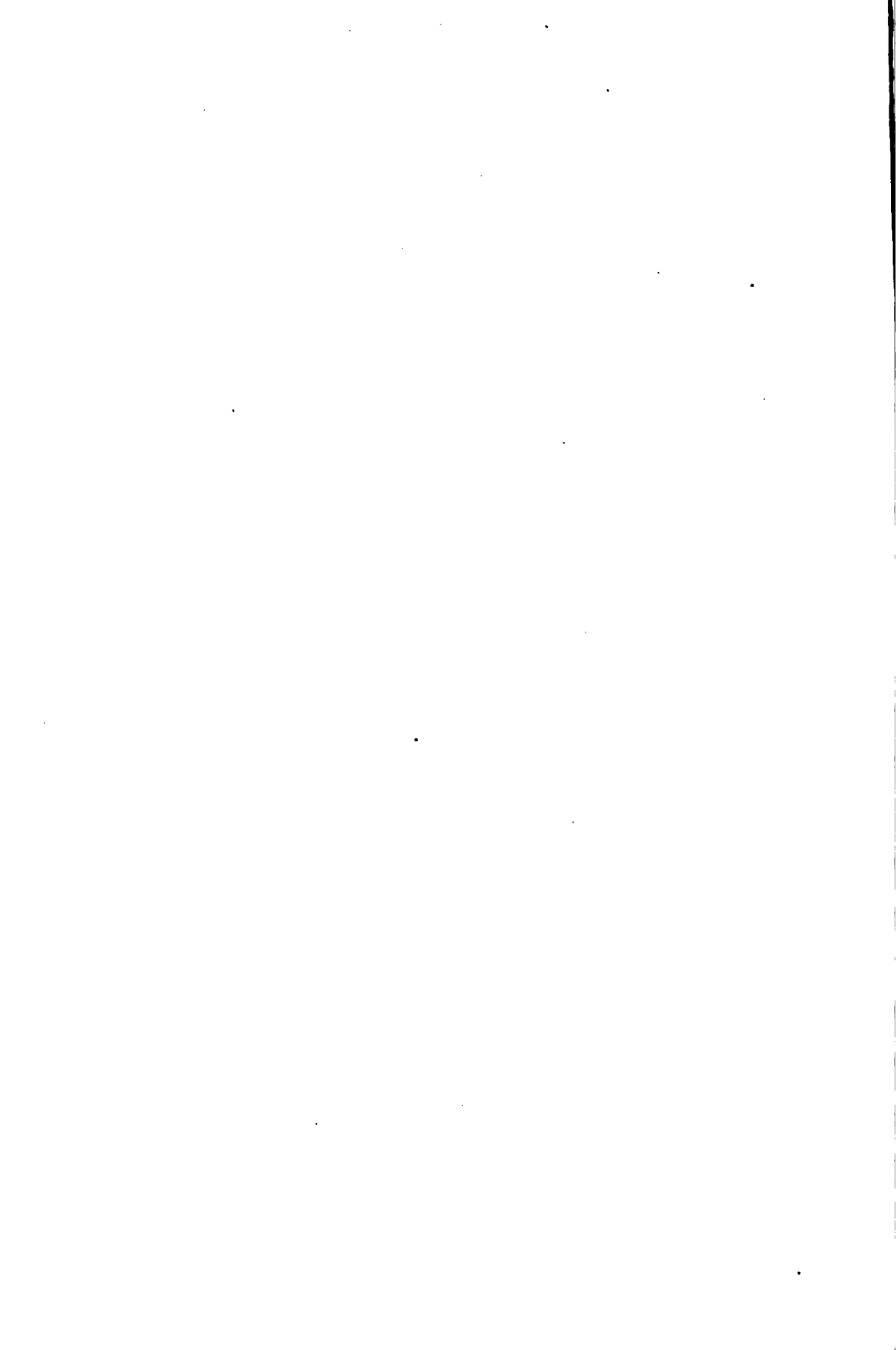
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	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
Room 1—						
Ways and Means		2 p. m.	2 p. m.	2 p. m.	3 p. m.	
Judiciary	2 p. m.		2 p. m.			2 p. m.
Agriculture		3 p. m.	4 p. m.	3 p. m.		
Railroads and Commerce		4 p. m.				4 p. m.
Printing						
Room 6—						
Roads and Highways		4 p. m.		2 p. m.		
Mines and Mining	2 p. m.					2 p. m.
Animal Industry		2 p. m.				
Judicial Districts	3 p. m.	2 p. m.		3 p. m.		
Hospital for Insane			2 p. m.		4 p. m.	
Public Charities			4 p. m.		2 p. m.	
Room 27—						
Elections				4 p. m.		2 p. m.
Schools and Text-books		2 p. m.		2 p. m.		
Suppression of Intemperance		4 p. m.			4 p. m.	
Insurance	3 p. m.		3 p. m.			
Room 10—						
Congressional Districts		2 p. m.		2 p. m.		
Penitentiaries			2 p. m.			2 p. m.
Engrossed Bills	2 p. m.				2 p. m.	
Pardons		3 p. m.		3 p. m.		
State University	4 p. m.			4 p. m.		
Institute for Feeble-Minded			4 p. m.			4 p. m.
Room 11—						
Pharmacy		2 p. m.			4 p. m.	
Appropriations			2 p. m.	2 p. m.	2 p. m.	
Normal Schools	4 p. m.			4 p. m.		
College for the Blind			4 p. m.			2 p. m.
Institute for Deaf	2 p. m.					4 p. m.
Room 2—						
Constitutional Amendments		4 p. m.			4 p. m.	
Woman Suffrage			4 p. m.	4 p. m.		
Retrenchment and Reform			2 p. m.			2 p. m.
Military	2 p. m.			2 p. m.		
Enrolled Bills		3 p. m.			3 p. m.	
Room 12—						
Representative Districts	2 p. m.				2 p. m.	
Domestic Manufactures	3 p. m.				3 p. m.	
County and Twp. Organization		4 p. m.		4 p. m.		
Telegraph, Telephone and Ex.			3 p. m.	3 p. m.		
Room 13—						
Industrial Schools		3 p. m.		3 p. m.		
Senatorial Districts	4 p. m.			4 p. m.		
Horticulture		2 p. m.			2 p. m.	
Agricultural College			2 p. m.			
Room 14—						
Soldiers' and Orphans' Home	2 p. m.			2 p. m.		
Federal Relations		2 p. m.			2 p. m.	
Fish and Game		3 p. m.			3 p. m.	
Police Regulations	3 p. m.			3 p. m.		
Claims			2 p. m.			2 p. m.
SPEAKER'S ROOM—						
Committee on Rules						
Room 7—						
Labor		4 p. m.			4 p. m.	
Public Lands and Buildings	2 p. m.			2 p. m.		
Public Libraries			2 p. m.		2 p. m.	
Building and Loan			4 p. m.			
Room 15—						
Public Health			2 p. m.			2 p. m.
Banks and Banking		2 p. m.		2 p. m.		
Municipal Corporations		4 p. m.		4 p. m.		
Compensation of Pub. Officers	4 p. m.				4 p. m.	
Private Corporations			4 p. m.			4 p. m.

Room 5—Chief Clerk.

Room 4—Journal Clerk.

Room 8—File Clerk.



BIENNIAL REPORT

OF THE

Board of Dental Examiners

TO THE

GOVERNOR OF THE STATE

FOR THE

Period Beginning July 1, 1901, and ending June 30, 1903.

PRINTED BY ORDER OF THE GENERAL ASSEMBLY

DES MOINES
BERNARD MURPHY, STATE PRINTER
1903

BIENNIAL REPORT OF THE BOARD OF DENTAL EXAMINERS.

FOR THE PERIOD BEGINNING JULY 1, 1901, AND ENDING JUNE 30, 1903.

To His Excellency, A. B. CUMMINS, Governor of Iowa:

The Board of Dental Examiners has the honor to submit the following report of its actions and doings for the biennial period from July 1, 1901, to June 30, 1903. The previous biennial report of this board made to Gov. L. M. Shaw, was of necessity incomplete, for reasons which were set forth in the report itself. The difficulties in the way of making a complete report at that time are also fully outlined in the annual report of the secretary and treasurer of the board, which was submitted to him at Iowa City, June 10, 1902, and spread upon the minutes of the meeting of that date. These difficulties have in a measure been removed by the adoption by the board of an improved system of accounting, which has been in use since May 1, 1902.

During this biennial period the board has examined 196 applicants for license. The board would respectfully request that this report be printed in accordance with section 124 of the Code of 1897, in order that the labors of the board may be a benefit to the public and the dental profession.

Attached hereto and forming a part of this report is the financial statement of the funds received and disbursed by this board, during the period covered by this report; also, the annual report of the auditing committee.

Respectfully submitted,

THE IOWA STATE BOARD OF DENTAL EXAMINERS,

F. P. WEBBER,
F. M. SHRIVES,
T. L. JAMES,
C. S. SEARLES.



FINANCIAL STATEMENT OF BOARD OF DENTAL EXAMINERS
For the biennial period beginning July 1, 1901 and ending June 30, 1903.

RECEIPTS.

1901			
July	1.	Balance on hand.....	\$ 1,060.96
July	23.	Examination fees.....	\$ 20.00
1902			
January	2.	Examination fees.....	100.00
January	4.	Examination fees.....	40.00
January	7.	Examination fees.....	80.00
May	6.	Examination fees.....	740.00
May	29.	Examination fees.....	20.00
June	7.	Examination fees.....	20.00
June	17.	Examination fees.....	740.00
June	19.	Examination fees.....	20.00
July	1.	Examination fees.....	20.00
August	10.	Examination fees.....	20.00
October	9.	Examination fees.....	20.00
July	1.	Received from Dr. Webber, balance.....	18.10
1903			
February	23.	Delinquent renewal fees (Code of '97).....	2.00
March	4.	Examination fees.....	20.00
March	26.	Examination fees.....	20.00
April	4.	Examination fees.....	20.00
April	23.	Examination fees.....	20.00
April	25.	Examination fees.....	20.00
April	23.	Examination fees.....	20.00
April	29.	Examination fees.....	240.00
May	2.	Examination fees.....	20.00
May	5.	Examination fees.....	680.00
May	14.	Examination fees.....	20.00
May	20.	Examination fees.....	20.00
May	27.	Examination fees.....	20.00
June	5.	Examination fees.....	20.00
June	12.	Examination fees.....	40.00
June	18.	Examination fees.....	880.00
Total receipts.....			\$ 3,920.10
Total receipts and balance on hand.....			\$ 4,181.06

DISBURSEMENTS.

Total disbursements as per itemized statement.....	\$ 4,265.56
Balance, cash on hand.....	715.50
Total.....	\$ 4,981.06

ITEMIZED STATEMENT OF EXPENDITURE

DATE.		TO WHOM PAID—FOR WHAT PURPOSE.	
1901			
July	6	Envelopes.....	
July	18	J. S. Kulp—	
		Mileage.....	
		Hotel.....	
		Per diem.....	
		Postage.....	
July	22	T. L. James—	
		Mileage.....	
		Per diem.....	
		Per diem.....	
		Sundries.....	
July	22	F. A. Lewis, secretary—	
July	27	Per diem.....	
July	29	Postage.....	
August	16	Expressage.....	
September	26	Postage.....	
		Express.....	4.
September	26	Stationery.....	17.00
		Postage.....	.60
September	30	Postage.....	.60
October	10	Printing.....	12.00
October	17	Postage.....	.40
October	17	Express.....	1.62
October	20	E. P. Webber—	
		Per diem.....	30.00
		Mileage.....	16.80
November	4	F. A. Lewis, secretary—	
		Carbon paper.....	.10
1902			
January	2	Postage.....	.98
January	4	F. P. Webber—	
		Advanced on Voucher No. 16.....	51.00
January	7	J. S. Kulp—	
		Advanced on account.....	20 00
January	11	F. A. Lewis, secretary—	
January	27	Per diem.....	9 00
		Express.....	.80
May	1	F. M. Shriver, Voucher No. 1—	
		Per diem.....	30.00
		Mileage.....	11.63
		Two meals.....	1.40
		Bns.....	.75
		Hotel.....	6.25
		Postage.....	.25
May	1	A. B. Molyneux, Voucher No. 2—	
		Mileage.....	9.20
		Hotel.....	6.25
		Per diem.....	32.50
May	1	F. A. Lewis, secretary, Voucher No. 3—	
		Amount previously due.....	29.31
		Mileage.....	5.54
		Per diem.....	15.00
		Hotel.....	3.00
		Transfers.....	1 00
		Registration fee.....	.25
		Telephone.....	.60

BOARD OF DENTAL EXAMINERS.

7

EXPENDITURES—CONTINUED.

FINANCIAL
For the bien

TO WHOM PAID—FOR WHAT PURPOSE.

AMOUNT.

1901
July
July
192
January
January
January
May
May
June
June
June
July
August
October
July
May

May

May

May

May

1901
July

1902

June

TO WHOM PAID—FOR WHAT PURPOSE.		AMOUNT.
F. A. Lewis, secretary, Voucher No. 4—		
Per diem		1.00
Per diem		5.00
Mileage		5.47
Hotel		8.25
Car fare		.80
Typewriting		.80
Transfers		.80
Mileage		.50
Per diem		2.77
Hotel		15.00
Car fare		4.50
Mileage		.40
Express		2.77
Per diem		.80
Mileage		15.00
Car fare and hotel		5.51
		7.75
F. A. Lewis, secretary, Voucher No. 5—		
(See later.)		
T. L. James, Voucher No. 6—		
(See later.)		
F. A. Lewis, secretary, Voucher No. 7—		
Stationery		8.90
Room for examiner, Voucher No. 7—		
(Balance of voucher see later.)		4.70
F. A. Lewis, secretary, Voucher No. 8—		
L. E. Rogers, auditing committee		5.00
W. W. V. auditing committee		5.00
O. M. Work, auditing committee		5.00
Paid J. S. Kuip, balance due		2.40
May 1 Paid G. S. Gilbertson, state treasurer		599.92
F. A. Lewis, secretary, Voucher No. 7—Continued—		
Printing		85.00
Postage		3.89
Per diem		25.00
T. L. James, Voucher No. 6—		
Mileage		8.50
Transfers		1.00
Hotel		12.00
Notary fee		.25
Car fare		.80
Mileage		1.17
Per diem		25.00
F. A. Lewis, secretary, Voucher No. 5—		
Transfer		.25
Mileage		2.77
Transfer		.25
Car fare		.90
Hotel		15.75
Eyelets		.60
Transfer		.25
Mileage		.68
Transfer		.25
Notary fee		.25
Per diem		25.00
F. A. Lewis, secretary, Voucher No. 8—Continued—		
Paid J. E. Rose for assisting board		10.00
T. L. James—		
Hotel (omitted by error)		6.75
F. A. Lewis, secretary, Voucher No. 9—		
Express		.70
Rubber stamps		2.10
Numbering machine		4.25
Stationery		1.00
Telephone		.60
Postage		1.66

EXPENDITURES—CONTINUED.

DATE.	TO WHOM PAID—FOR WHAT PURPOSE.	AMOUNT.
1902.		
June 18	F. P. Webber, Voucher No. 10—	\$ 20.00
	Per diem.....	8.05
	Mileage.....	8.50
	Meals, sleeper and bus.....	20.00
	Per diem.....	2.00
	Hotel and hack.....	8.05
	Mileage.....	.25
	Notary fee.....	
	F. M. Shriver Voucher No. 12—	.71
	Mileage.....	4.45
	Mileage.....	1.00
	Bus.....	11.25
	Hotel.....	.95
	One meal.....	1.45
	Mileage.....	.50
	Transfer.....	1.20
	Mileage.....	.98
	Meals.....	30.00
	Per diem.....	.80
	Car fare.....	20.00
	Per diem.....	.90
	Postage and notary fee.....	
June 18	T. L. James, Voucher No. 13—	.50
	One meal.....	2.20
	Postage.....	.50
	Express.....	20.00
	Per diem.....	20.00
	Per diem.....	6.64
	Mileage.....	1.25
	Transfer and notary fee.....	
June 14	F. A. Lewis, secretary, Voucher No. 14—	
	Hotel for board members, \$43.50; less \$14.75.....	31.75
	Exchange.....	.45
May 10	Examination fee, check of H. W. Hemingway, forwarded to Governor Cummins.....	20.00
July 1	J. S. Kulp, Voucher No. 11—	
	Per diem.....	30.00
	Mileage.....	2.48
	Per diem.....	15.00
	Hotel and mileage.....	18.51
	Per diem.....	30.00
	Hotel and mileage.....	18.18
	Per diem.....	15.00
	Mileage.....	9.40
	Per diem and postage.....	15.32
	Per diem.....	25.00
	Mileage, hotel and notary.....	10.23
	Per diem.....	20.00
	Mileage and hotel.....	14.93
July 1	F. A. Lewis, secretary, Voucher No. 15—	
	Ink pad.....	2.00
	Transfer.....	.25
	Mileage.....	2.77
	Transfer.....	.25
	Postage.....	.20
	Typewriting.....	.50
	Per diem.....	20.00
	Mileage.....	2.78
	Safe rent.....	12.00
	Paste.....	.25
	Express.....	4.20
	Hotel.....	9.75
	Postage.....	2.12
	Car fare.....	.40
	Blank book.....	.25
	Per diem.....	15.00
	Transfer.....	.80
	Mileage.....	10.06
	One meal.....	1.00
	Transfer and hotel.....	3.75
	Per diem.....	35.00
	Salary of treasurer.....	300.00

EXPENDITURES—CONTINUED.

DATE.	TO WHOM PAID—FOR WHAT PURPOSE.	AMOUNT.
1902.		
July 1	F. P. Webber, Voucher No. 16—	
	Printing	\$ 1.80
	Printing	5.00
	Express	.5
	Per diem	22.50
	Typewriting	5.25
	Express	2.05
	Telephone	.80
	Paper	.60
	Per diem	22.50
	Express	.25
	Telephone	.80
	Postage	1.74
	Per diem	17.50
June 27	F. P. Webber, Voucher No. 17—	
	Per diem	\$ 10.00
	Mileage and hotel	12.20
	Per diem	15.00
	Mileage and meals	17.89
	Express	.80
	Per diem	5.00
	Total	\$ 59.89
	Less amount advanced January 7, 1902	20.00
	Total	39.89
	F. P. Webber, Voucher No. 18—	
	Per diem	20.00
	Mileage	9.45
	Two meals	1.40
	Hotel	6.25
	Per diem	20.00
	Car fare	.40
	Hotel and notary fee	1.25
July 2	F. M. Shriver, Voucher No. 19—	
	Bus and mileage	11.64
	Hotel	8.50
	Car fare	.40
	Two meals	1.00
	Per diem	20.00
	Notary fee	.25
	Bus and mileage	16.97
	Bus and mileage	1.71
	One meal and sleeper	2.95
	Per diem	45.00
June 2	T. L. James, Voucher No. 20—	
	Per diem	20.00
	Mileage	6.98
	Hotel	7.00
	Per diem	20.00
	Car fare	.80
	Bus	.75
	One meal	.50
	Hotel and bus	2.00
July 7	E. L. Brooks, Voucher No. 21—	
	Balance previously due	37.57
	F. A. Lewis, secretary, Voucher No. 22—	
	Express	1.80
	Seals	1.25
	Register	5.00
	Ink	.15
	Copying records, clerk hire	10.00
	Per diem	30.00
	Postage	4.25
	Stationery	22.00
	Express	.50
	Supplies	.70
	Due from Dr. Webber, paid twice	5.90
	J. S. Kulp, balance paid	7.02

EXPENDITURES—CONTINUED.

DATE.		TO WHOM PAID—FOR WHAT PURPOSE.	AMOUNT.
1908			
May	17	F. A. Lewis, secretary, Voucher No. 23—	
		Returned fee to E. R. Johnson	\$ 20.00
		Postage and money order	.15
		Stationery and express	2.60
		Ink, etc	2.75
		Express	1.80
		Typewriter repairs	80.00
		Transfer	.50
		Printing	45.00
		Numbering and paging papers	10.00
		Per diem	10.00
		Postage	8.55
		Auditing committee	81.50
		Transfers	2.00
		Hotel	4.00
		Mileage	1.55
		Per diem	15.00
		Transfers	.50
		Notary	.25
April	30	T. L. James, Voucher No. 24—	
		Per diem	5.00
		Bus	.25
		Mileage	2.47
		Bus	.25
		Hotel	5.50
		One meal	.50
		Mileage	2.47
		Per diem	13.00
		Postage	2.80
		Per diem	10.00
		Notary	.25
April	30	F. P. Webber, Voucher No. 25—	
		Mileage and hotel	5.06
		Per diem	5.00
		Per diem	15.00
		Postage	1.00
		Mileage	11.06
		Hotel, bus and sleeper	4.80
		Hotel	3.25
		Mileage	9.88
		Hotel	2.50
		Per diem	20.00
		Telegram	.40
		Notary	.25
April	30	F. M. Shriver, Voucher No. 26—	
		Per diem	5.00
		Express	.25
		Per diem	10.00
		Postage	1.00
		Mileage	9.47
		Bus	1.25
		Hotel	4.00
		Mileage	9.47
		Sleeper	2.50
		Per diem	20.00
		Notary	.25
May	7	C. S. Searles, Voucher No. 27—	
		Per diem	10.00
		Mileage	19.00
		Sleeper and bus	5.00
		Hotel	7.00
		Per diem	85.00
		Notary	.25
		F. M. Shriver, Voucher No. 28—	
		Bus	1.00
		Mileage	7.94
		Hotel	9.00
		Hotel	2.25
		Per diem	85.00
		Notary	.25

EXPENDITURES—CONTINUED.

DATE.	TO WHOM PAID—FOR WHAT PURPOSE.	AMOUNT.
1908		
May 7	F. P. Webber, Voucher No. 29—	
	Per diem	\$ 30.00
	Hotel	10.50
	Mileage	8.00
	Notary	.25
May 7	T. L. James, Voucher No. 30—	
	Hotel	9.40
	Bus	.50
	Sleeper	4.00
	Mileage	20.43
	Per diem	85.00
	Notary fee	.25
May 7	F. A. Lewis, secretary, Voucher No. 31—	
	Mileage and meals	20.98
	Hotel	10.25
	Bus	.50
	Per diem	85.00
	Transfer	1.50
	Exchange	.40
	Tables and chairs	4.90
	Stenographer	5.00
	Per diem	25.00
	Cab	.25
	Express	2.20
	Bus	.25
	Mileage	12.83
	Four meals	2.00
	Per diem	20.00
	Salary of treasurer	300.00
	Hotel for board members—	
	Webber	8.00
	Shriver	7.50
	James	4.00
	Searles	5.00
	Lewis	4.50
	Per diem	30.00
	Notary	.25
June 19	T. L. James, Voucher No. 32—	
	Per diem	45.00
	Mileage	8.60
	Meals	2.50
	Lodging	1.00
	Bus	1.00
	Per diem	30.00
	One meal	1.00
	Postage	.50
	Notary	.25
June 19	O. S. Searles, Voucher No. 33—	
	Per diem	25.00
	Bus	.25
	Mileage	4.20
	Bus	.25
	Mileage	4.20
	Sleeper	1.50
	Meals	.50
	Express	.50
	Per diem	50.00
	Notary	.25
	One meal	.50
June 19	F. P. Webber, Voucher No. 34—	
	Per diem	25.00
	Mileage	24.05
	Per diem	50.00
	Notary fee and postage	.85
June 19	F. M. Shriver, Voucher No. 35—	
	Per diem	25.00
	Mileage	16.98
	Meals and berth	4.50
	Per diem	55.00
	Postage and notary	.75
May 1	Balance paid G. S. Gilbertson, State Treasurer	57.81
	Total expenditures	\$ 4,285.56

To His Excellency, A. B. CUMMINS, Governor of Iowa:

In compliance with section eight of the law regulating the practice of dentistry in Iowa, the undersigned auditing committee begs leave to submit the following report.

We have carefully examined the books and vouchers submitted by the treasurer of the State Board and find them correct and in good order. The following is a summary of the footings as shown by said books:

Balance on hand January 1, 1908	\$ 205.50
Receipts from January 1 to August 1, 1908.....	2,202.00
Total cash receipts.....	\$ 2,407.50
Disbursements from January 1, 1908, to August 1, 1908	\$ 1,692.00
Balance on hand....	\$ 715.50

Respectfully submitted,

J. L. TAYLOR,
J. V. COUZETT,
H. R. THIEL.

Subscribed and sworn to before me, October 14, 1903.

[SEAL.]

H. C. KENLINE,

Notary Public of Iowa, in and for Dubuque County.

BIENNIAL REPORT

OF

Inspectors of Oils.

1902 - 1903

COMPILED BY

W. B. MARTIN, Secretary of State.

PRINTED BY ORDER OF THE GENERAL ASSEMBLY.

DES MOINES
BERNARD MURPHY, STATE PRINTER
1903

LETTER OF TRANSMITTAL.

To His Excellency, the HON. ALBERT B. CUMMINS, *Governor of Iowa.*

DEAR SIR,—In accordance with the provisions of section 2510, chapter 2, Title XII of the Code of 1897, I have the honor to transmit herewith a report of the inspections, receipts and expenditures made by the oil inspectors during the biennial period ending June 30, 1903.

In my former report covering the biennial period ending June 30, 1901, attention was called to the increased amount of fees paid to the state over previous biennial period, the net gain being in the sum of \$6,448.36. The period for which this report covers shows a larger gain over the preceding period, the same being in the amount of \$8,707.47. A detailed comparison being shown on the last page of this report from which it appears there has been a slight increase in the amount of fees retained by the inspectors, and in expenses, with a very substantial increase in the number of barrels of oil and gasoline inspected and a corresponding increase of fees received and amount paid to the state.

The inspection service has in my judgment been materially improved, the inspectors generally co-operating with this department in the effort to secure an honest administration and as thorough enforcement of the law as is possible in its present form.

F. B. Rogers, of Britt, inspector of the Eighth District reports a serious accident at Nashua, Iowa, resulting in the death of three persons, which was caused by the use of kerosene oil used in kindling fires. It appears that the oil so used had been inspected and found below the standard of 105 degrees required under the statutes, consequently rejected. In endeavoring to raise the grade to the required standard, gasoline had been

mixed with it, and, although warned by the inspector of its dangerous character, a portion had been sold with the disastrous results above stated.

In my opinion stringent laws with severe penalty attached should be enacted to cover cases of this character. Frequent complaints have reached this department of the failure of retail dealers to properly label cans and vessels filled with gasoline by them and distributed to customers, and a number of explosions, principally lamps have been reported by the inspectors as resulting from such failure to comply with the law relating thereto.

Inspectors report that many dealers are ignorant of this statutory requirement, others careless or indifferent, and in one case an absolute refusal on the part of the dealer to use the labels after being warned by the inspector of his liability for all resulting damages in case of an explosion. A penalty in addition to liability for damages should be imposed for such failure, and the inspector clothed with full authority to prosecute the offending parties.

The present law was enacted at a time when the oil business was conducted on entirely different lines, the distribution of oil and gasoline to dealers being in the form of barreled goods instead of in tank cars to distributing stations, and from thence by tank wagon as at present, hence the law does not fit present conditions.

I therefore take the liberty of suggesting that you earnestly recommend to the next general assembly a thorough revision of the present statutes, along the line of strengthening the weak points, and the addition of the necessary provision for adaptation to modern conditions of the oil business. Briefly stated I would recommend the following changes:

(a) Provide for fees to be paid to the secretary of state instead of treasurer of state.

(b) Provide under proper regulation for purchase of supplies, instruments and apparatus by the executive council and furnished inspectors on requisition made to secretary of state and approved by him.

(c) Provide for system of accounting for apparatus and instruments by inspectors.

(d) Require verification of reports by affidavit of inspectors.

(e) Clothe the secretary of state with full power and authority to examine and approve reports, audit and allow ex-

penditures made by inspectors for necessary expenses, as in his judgment may be reasonable and just.

(f) Provide for monthly reports by the person, firm or corporation receiving petroleum products subject to inspection, duly verified showing amount inspected, when, where and for whom inspected, fees received, and that said report covers all such goods received by them subject to inspection, and penalty for failure to make such report, or, in lieu of the above reports, provide that any person, firm or corporation shipping into this state petroleum products that are subject to inspection, shall deliver or forward to the inspector of the inspection district where the inspection must be made, a written notice of the date of shipment, destination, amount and kind of product shipped and probable time of arrival, and a duplicate notice forwarded to the secretary of state.

(g) Make more specific provisions for appointment and compensation of deputies and helpers.

(h) Making failure of inspectors to report within the time prescribed by law malfeasance in office and subject to dismissal from the service with penalty added, one or both, as may be deemed advisable.

(i) Separate section 2508 into subdivisions.

(j) Provide penalty for failure of dealers to affix gasoline labels on cans, vessels, etc., filled by them and delivered to customers, and clothing inspectors with authority to enter complaints and make prosecutions.

(k) Provide for a tribunal with authority to determine all matters of dispute arising between inspectors and the parties for whom inspection is made.

(l) Provide a better method of payment of fees of inspectors in cases where salary and expenses exceed the amount of fees collected.

Respectfully,

W. B. MARTIN,
Secretary of State.

RECORDS OF INSPECTORS.

REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
JULY, 1901.

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M.	Des Moines	1,204	1,781	236.80	\$100.00	\$114.85	\$78.95	\$75.00	
Weinstein, Loui.	Burlington	168	1,263	142.50	78.12	66.85	3.58	58.00	
Crawshaw, Adam	Clinton	1,888	1,232	265.50	100.00	101.90	63.60	75.00	
Bauman, S. H.	Mt. Vernon	842	1,749	259.10	100.00	100.14	53.98	75.00	
Udall, F. O.	Dubuque	1,069	889	194.80	86.20	102.20	6.40	75.00	
Hartman, W. D.	Waterloo	757	1,282	308.90	88.47	97.82	78.11	25.50	
Bishop, J. B. M.	Toledo	858	1,523	237.90	95.98	39.95	110.97	20.00	
Meyers, C. K.	Mason City	989	988	195.70	85.42	81.91	77.87	12.00	
Gullixson, O. F.	Bode	855	1,822	217.70	91.92	45.45	79.88	18.00	
Young, J. F.	Denison	614	653	126.70	69.17	45.28	12.25	20.50	
Welch, W. A.	Sioux City	1,021	1,559	258.00	100.00	78.44	70.58	45.00	
Guttar, Theo.	Council Bl.	868	1,329	169.20	79.80	43.02	47.88	15.00	
O'Keefe, John.	Creston	264	709	97.80	61.82	81.12	4.82	10.00	
Hare, C. H.	Oskaloosa	517	883	140.00	72.50	58.06	9.45	47.50	
Total.		10,844	17,174	\$2,901.80	\$1,206.40	\$385.18	\$710.22	\$598.50	

REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
AUGUST, 1901.

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M.	Des Moines	1,209	2,805	\$401.40	\$100.00	\$113.80	\$188.10	\$100.00	
Weinstein, Loui.	Burlington	1,538	1,915	\$47.50	100.00	101.85	145.45	85.00	
Crawshaw, Adam	Clinton	1,929	1,690	\$53.90	100.00	103.87	162.08	95.00	
Bauman, S. H.	Mt. Vernon	1,568	1,601	\$16.40	100.00	114.89	101.51	75.00	
Udall, F. O.	Dubuque	1,499	1,029	\$22.50	100.00	111.35	41.45	75.00	
Hartman, W. D.	Waterloo	523	2,227	\$75.00	100.00	81.25	144.36	25.50	
Bishop, J. B. M.	Toledo	1,534	1,899	\$24.00	100.00	49.86	140.44	20.00	
Meyers, C. K.	Mason City	636	1,640	\$27.00	94.87	16.42	113.81	12.00	
Gullixson, C. F.	Bode	1,085	1,576	\$26.10	100.00	52.61	113.49	18.00	
Young, J. F.	Denison	837	984	\$77.10	81.70	42.67	52.73	20.00	
Welch, W. A.	Sioux City	1,131	1,502	\$26.80	100.00	86.82	76.26	45.00	
Guttar, Theo.	Council Bl.	1,703	1,978	\$38.10	100.00	61.45	203.65	15.00	
O'Keefe, John.	Creston	838	976	\$11.40	82.85	84.14	64.41	10.00	
Hare, C. H.	Oskaloosa	18	1,622	\$708	\$288.80	\$6.88	41.02	47.50	
Total.		13,178	21,915	\$3,960.10	\$1,854.87	\$1,019.81	\$1,585.42	\$643.00	

*In the above and all the following tables the several amounts given as paid for deputy and helpers, branding barrels, is included in the expense column.

**REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
SEPTEMBER, 1901.**

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M. . . .	Des Moines	2,921	1,755		\$467.60	\$100.00	\$125.40	\$242.20	\$100.00
Weinstein, Loui. .	Burlington	1,678	1,046		272.40	100.00	101.45	70.95	78.00
Crawshaw, Adam .	Clinton	3,011	769		378.00	100.00	110.91	167.09	95.00
Bauman, S. H. . .	Mt. Vernon	2,282	1,565		384.70	100.00	113.98	170.92	75.00
Udall, F. O. . . .	Dubuque	1,920	591		251.10	100.00	134.90	16.20	75.00
Hartman, W. D. . .	Waterloo	1,813	981		217.40	100.00	45.17	132.23	25.50
Bishop, J. B. M. .	Toledo	1,774	520		224.30	94.88	48.88	86.00	20.00
Meyers, C. K. . . .	Mason City	1,031	479		211.00	90.25	45.78	75.02	12.00
Gullixson, C. F. .	Bode	2,234	648		292.20	100.00	92.12	100.08	18.00
Young, J. F. . . .	Denison	1,547	514		206.10	89.00	49.05	68.05	20.00
Welch, W. A. . . .	Sioux City	1,002	1,014		261.60	100.00	101.78	59.82	46.00
Guttar, Theo. . . .	Council Bl.	1,475	1,188		296.30	100.00	58.41	107.49	15.00
O'Keeffe, John. . .	Oreston	1,244	515		181.90	82.97	50.76	48.17	10.00
Hare, C. H.	Oskaloosa	1,371	1,177		235.30	100.00	96.55	53.75	47.50
Total.		5,265,502	12,842		\$3,984.90	\$1,357.05	\$1,174.89	\$1,408.46	\$632.00

**REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
OCTOBER, 1901.**

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M. . . .	Des Moines	8,019	1,948		\$ 483.20	\$ 100.00	\$ 123.80	\$ 212.40	\$ 100.00
Weinstein, Loui. .	Burlington	1,739	546		223.50	94.62	98.25	40.68	78.00
Crawshaw, Adam .	Clinton	2,635	861		343.60	100.00	112.93	135.67	95.00
Bauman, S. H. . .	Mt. Vernon	2,219	1,091		381.00	100.00	114.77	116.23	75.00
Udall, F. O. . . .	Dubuque	2,288	499		273.70	100.00	141.00	37.70	75.00
Hartman, W. D. . .	Waterloo	1,820	1,388		270.30	100.00	38.27	132.03	25.50
Bishop, J. B. M. .	Toledo	2,855	631		285.60	100.00	53.15	132.45	20.00
Meyers, C. K. . . .	Mason City	1,048	842		189.00	84.75	33.58	65.67	12.00
Gullixson, C. F. .	Bode	1,197	728		192.30	85.57	60.36	46.36	18.00
Young, J. F. . . .	Denison	1,147	336		148.30	74.57	51.07	22.66	20.00
Welch, W. A. . . .	Sioux City	1,903	1,108		301.10	100.00	112.45	88.65	46.00
Guttar, Theo. . . .	Council Bl.	1,042	773		181.50	82.87	55.88	42.80	15.00
O'Keeffe, John. . .	Oreston	1,090	486		157.60	76.90	54.12	26.58	10.00
Hare, C. H.	Oskaloosa	1,708	584		229.20	94.75	96.25	38.20	47.50
Total.		24,710	11,099		\$3,580.90	\$1,294.08	\$1,148.84	\$1,188.06	\$632.00

REPORT OF INSPECTIONS, SALARY AND EXPENSE FOR THE MONTH OF NOVEMBER, 1901.

Inspector.	Address.	No. bbls. oil rejected.	No. bbls. oil approved.	No. bbls. gasoline rejected for illuminating purposes	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper branding barrels.
Pickell, H. M. ...	Des Moines	3,457	650		\$410.70	\$100.00	\$167.60	\$143.10	\$100.00
Weinstein, Louis ...	Burlington	1,475	547		202.20	88.05	92.40	21.75	68.00
Weinstein, Louis, supplemental for July, Aug. and Oct.	Burlington		447		44.70	8.42	3.87	32.41	
Crawshaw, Adam	Clinton	1,731	806		262.70	100.00	113.41	49.29	95.00
Bauman, S. H. ...	Mt. Vernon	2,208	1,094		320.70	100.00	129.03	100.67	75.00
Udall, F. O. ...	Dubuque	2,223	558		278.10	100.00	138.90	39.20	75.00
Hartman, W. D.	Waterloo	1,644	1,077		272.10	100.00	43.40	128.61	25.50
Bishop, J. B. M.	Toledo	2,233	912		314.50	100.00	62.54	151.96	20.00
Meyers, C. K.	Mason City	916	518		148.40	73.35	33.43	36.62	12.00
Gullexson, C. F.	Bode	1,405	767		217.20	91.80	65.56	59.84	18.00
Young, J. F.	Denison	1,277	607		183.40	84.60	62.47	41.33	20.00
Welch, W. A.	Sioux City	2,331	723		305.70	100.00	115.84	89.85	46.00
Guittar, Theo. ...	Council Bl.	1,853	678		253.10	100.00	66.79	86.31	15.00
O'Keeffe, John ...	Creston	1,503	336		183.90	83.47	53.10	44.33	10.00
Hare, C. H.	Oskaloosa	1,243	438		253.20	100.00	121.13	37.07	47.50
Total		126,394	10,251		\$3,664.60	\$1,329.69	\$1,272.56	\$1,062.35	\$627.00

REPORT OF INSPECTIONS, SALARY AND EXPENSE FOR THE MONTH OF DECEMBER, 1901.

Inspector.	Address.	No. bbls. oil rejected.	No. bbls. oil approved.	No. bbls. gasoline rejected for illuminating purposes	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper branding barrels.
Pickell, H. M. ...	Des Moines	3,081	1,516		\$459.70	\$100.00	\$112.10	\$247.60	\$75.00
Weinstein, Louis.	Burlington	2,112	437		259.90	100.00	110.70	49.20	73.00
Crawshaw, Adam	Clinton	2,315	1,014		332.90	100.00	115.47	117.43	95.00
Bauman, S. H. ...	Mt. Vernon	2,694	1,310		400.40	100.00	146.65	153.75	75.00
Udall, F. O.	Dubuque	2,807	24		315.00	100.00	144.90	71.00	75.00
Hartman, W. D.	Waterloo	1,071	649		272.00	100.00	45.54	126.46	25.50
Bishop, J. B. M.	Toledo	2,512	417		292.90	100.00	62.37	130.53	20.00
Meyers, C. K.	Mason City	1,904	791		278.50	100.00	36.67	141.83	12.00
Gullexson, C. F.	Bode	1,346	528		237.40	100.00	64.82	102.58	18.00
Young, J. F.	Denison	1,872	303		217.50	91.88	62.50	63.12	20.00
Welch, W. A.	Sioux City	2,725	686		341.10	100.00	124.86	116.24	46.00
Guittar, Theo. ...	Council Bl.	1,043	622		267.10	100.00	73.85	94.75	15.00
O'Keeffe, John ...	Creston	1,909	345		242.80	98.20	64.83	79.72	10.00
Hare, C. H.	Oskaloosa	2,113	443		256.20	100.00	110.45	45.75	47.50
Total		229,322	654		\$4,224.30	\$1,390.08	\$1,205.26	\$1,538.96	\$607.00

REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
JANUARY, 1902.

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expenses.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M....	Des Moines	118	4808	861	\$ 527.20	\$ 100.00	\$ 120.15	\$ 367.05	\$ 85.00
Weinstein, Loui.	Burlington	.....	2490	546	308.00	100.00	103.85	96.75	78.00
Crawshaw, Adam	Clinton	.....	8257	406	572.80	100.00	120.28	152.04	96.00
Bauman, S. H....	Mt. Vernon	.....	8276	511	873.70	100.00	146.68	182.07	75.00
Udall, F. O.....	Dubuque..	.....	8154	238	389.20	100.00	155.55	83.65	75.00
Hartman, W. D.	Waterloo..	.....	2906	841	344.60	100.00	45.92	198.68	25.50
Bi hop, J. B. M.	Toledo	.....	3387	289	362.60	100.00	75.82	186.78	21.00
Meyers, C. K....	Mason City	.....	2202	710	291.20	100.00	47.08	144.17	12.00
Gullixson, C. F.	Bode	.....	2591	969	355.00	100.00	84.99	171.01	18.00
Young, J. F.....	Denison...	.....	1886	440	232.60	95.65	80.12	56.88	21.50
Welch, W. A....	Sioux City.	.....	2255	766	301.10	100.00	110.09	91.01	46.00
Guttar, Theo....	Council Bl.	.....	8018	379	339.50	100.00	90.53	148.97	15.00
O'Keefe, John...	Creston...	.....	1890	381	221.10	92.77	61.97	66.86	10.00
Hare, C. H.....	Oskaloosa.	124	2575	264	296.30	100.00	118.81	82.49	47.50
Total. ....	.....	287	33,832	7,561	\$4,066.00	\$1,883.42	\$1,869.72	\$1,917.86	\$ 624.50

REPORT OF INSPECTIONS, SALARY AND EXPENSE FOR THE MONTH OF
FEBRUARY, 1902.

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expenses.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M. ...	Des Moines	....	2901	534	\$ 343.50	\$ 100.00	\$ 100.45	\$ 143.05	\$ 75.00
Weinstein, Loui.	Burlington	.....	1780	21	180.10	82.52	84.99	12.68	83.00
Crawshaw, Adam	Clinton	.....	2793	543	334.10	100.00	115.42	118.68	95.00
Bauman, S. H....	Mt. Ve non	.....	2188	426	261.40	100.00	137.70	23.70	75.00
Udall, F. O.....	Dubuque..	.....	1981	803	278.40	100.00	120.55	47.85	75.00
Hartman, W. D.	Waterloo..	111	1606	713	243.00	98.25	39.30	105.45	25.00
Bi-hop, J. B. M.	Toledo	.....	3004	569	357.80	100.00	53.44	203.86	20.00
Meyers, C. K....	Ma-on City	.....	1231	500	173.10	80.77	37.93	54.40	12.00
Gullixson, C. F.	Bode	.....	1043	469	154.20	75.05	60.63	17.52	18.00
Young, J. F.....	Denison...	.....	987	512	149.90	74.97	50.18	23.95	20.00
Welch, W. A....	Sioux City.	.....	2459	803	324.20	100.00	121.42	102.78	46.00
Guttar, Theo....	Council B.	.....	1508	339	193.70	85.92	59.63	43.15	15.00
O'Keefe, John...	Creston...	.....	1510	222	173.10	80.97	64.74	28.19	10.00
Hare, C. H.....	Oskaloosa.	.....	2577	504	253.10	100.00	98.11	59.99	47.50
Total. ....	.....	111	27,138	7,000	\$3,424.90	\$1,279.45	\$1,155.20	\$ 980.25	\$ 506.50

**REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
MARCH, 1902.**

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expenses.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M.	Des Moines	3,101		1,251	\$ 435.20	\$ 100.00	\$ 96.40	\$ 238.80	\$ 75.00
Weinstein, Loui.	Burlington	1,908		1,038	294.60	100.00	106.35	88.25	78.00
Crawshaw, Adam	Clinton	2,299		815	308.50	100.00	109.08	99.32	95.00
Bauman, S. H.	Mt. Vernon	980		1,032	201.20	87.80	104.37	9.03	75.00
Udall, F. O.	Dubuque	2,192		409	260.10	100.00	116.45	43.65	75.00
Hartman, W. D.	Waterloo	1,443		1,388	258.10	100.00	44.02	139.08	25.00
Bishop, J. B. M.	Toledo	1,797	148	1,033	237.80	100.00	53.79	132.01	20.00
Meyers, C. K.	Mason City	1,231		485	176.00	81.65	35.27	59.68	12.00
Gullixson, C. F.	Bode	1,599		649	221.80	92.95	79.10	49.75	18.40
Young, J. F.	Dennison	1,368		306	167.40	79.35	67.45	20.60	21.00
Welch, W. A.	Sioux City	1,624		885	250.90	100.00	87.81	63.06	46.00
Guittar, Theo.	Council B.	1,035		680	171.50	80.87	48.61	42.62	15.00
O'Keefe, John.	Creston	8	1,073	986	206.20	89.05	55.39	61.76	10.00
Hare, C. H.	Oskaloosa	11	2,083	736	283.00	100.00	110.11	72.89	47.50
Total.		162	23,723	11,608	\$3,557.80	\$1,311.17	\$1,119.10	\$1,127.53	\$ 612.50

**REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
APRIL, 1902.**

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expenses.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M.	Des Moines	1,959		1,539	\$ 349.80	\$ 100.00	\$ 94.45	\$ 155.35	\$ 75.00
Weinstein, Loui.	Burlington	1,226		696	192.20	85.55	84.75	21.90	73.00
Crawshaw, Adam	Clinton	2,030		1,249	327.90	100.00	106.18	119.72	95.00
Bauman, S. H.	Mt. Vernon	1,298		997	229.50	94.83	114.53	20.99	75.00
Udall, F. O.	Dubuque	1,830		1,142	258.20	100.00	109.90	43.80	75.00
Hartman, W. D.	Waterloo	943		1,032	200.00	87.50	87.15	76.35	25.50
Bishop, J. B. M.	Toledo	1,625		724	234.90	95.23	59.87	76.80	20.00
Meyers, C. K.	Mason City	1,554		951	260.50	100.00	33.87	117.13	12.00
Gullixson, C. F.	Bode	1,012		1,077	208.90	99.72	53.16	63.02	18.00
Young, J. F.	Dennison	1,120		853	147.50	74.32	55.37	17.61	20.00
Welch, W. A.	Sioux City	1,789		891	262.00	100.00	96.26	65.74	46.00
Guittar, Theo.	Council B.	1,143		1,414	255.70	100.00	50.59	103.12	15.00
O'Keefe, John.	Creston	1,067		882	189.90	72.22	37.29	29.89	10.00
Hare, C. H.	Oskaloosa	8	1,044	596	224.00	96.50	91.75	88.75	47.50
Total.		8	19,795	12,960	\$3,274.80	\$1,296.92	\$1,029.61	\$ 951.27	\$ 607.00

REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
MAY, 1902.

Inspector.	Address.	No. bbls oil re- jected.	No. bbls oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M. . .	Des Moines	...	1,824	1,680	\$ 845.40	\$ 100.00	\$ 94.50	\$ 150.90	\$ 75.00
Weinstein, Loui.	Burlington	...	786	849	162.90	73.22	32.50	2.12	63.00
Crawshaw, Adam	Clinton	...	1,535	1,027	255.20	100.00	109.86	45.84	96.00
Bauman, S. H. . .	Mt. Vernon	...	1,509	878	235.70	97.18	117.64	33.83	75.00
*Udall, F. O. . .	Dubuque	...	988	968	153.80	75.50	81.75	...	75.00
Hartman, W. D. .	Waterloo	...	808	968	177.10	81.77	31.52	66.81	25.50
Bishop, J. B. M. .	Toledo	...	1,202	1,192	239.40	97.55	45.29	93.76	30.00
Meyers, C. K. . .	Mason City	...	482	663	114.50	66.12	27.06	21.35	12.00
Gullixson, C. F. .	Bode	...	884	708	157.90	76.97	53.50	24.43	18.00
Young, J. F. . . .	Denison	...	1,065	578	163.60	78.40	55.24	22.96	20.00
Welch, W. A. . .	Sioux City	...	1,262	1,314	255.60	100.00	32.52	74.08	46.00
Guittar, Theo. . .	Council B.	...	1,660	700	265.90	98.47	65.95	78.50	15.00
O'Keeffe, John . .	Creston	...	1,370	568	98.90	80.97	30.27	2.66	10.00
Hare, C. H. . . .	Oskaloosa	5	1,414	1,068	245.70	98.98	94.32	52.45	47.50
Total.	...	5,15,721	12,674	\$2,840.00	\$1,208.18	\$ 987.87	\$ 668.80	\$ 601.50	

* Salary and expenses of F. O. Udall exceeded amount of fees collected by him by \$14.85.

REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF JUNE,
1902.

Inspector.	Address.	No. bbls oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M. . .	Des Moines	...	1,176	1,715	\$ 289.10	\$ 100.00	\$ 94.80	\$ 94.50	\$ 75.00
Weinstein, Loui.	Burlington	...	451	1,285	173.60	80.90	85.80	6.90	78.00
Crawshaw, Adam	Clinton	...	2,201	2,340	454.10	100.00	111.13	242.97	95.00
Bauman, S. H. . .	Mt. Vernon	...	1,183	2,103	323.60	100.00	109.86	118.74	75.00
*Udall, F. O. . .	Dubuque	...	583	540	112.30	65.57	94.20	...	75.00
Hartman, W. D. .	Waterloo	...	688	1,483	217.10	91.77	32.07	93.28	25.50
Bishop, J. B. M. .	Toledo	...	759	1,449	220.80	92.70	55.02	75.08	20.00
Meyers, C. K. . .	Mason City	...	1,212	904	211.60	90.40	22.68	93.52	12.00
Gullixson, C. F. .	Bode	...	874	1,128	150.20	75.05	35.96	39.19	18.00
Young, J. F. . . .	Denison	...	539	750	123.90	69.72	45.24	13.94	20.00
Welch, W. A. . .	Sioux City	...	677	1,236	196.30	86.57	64.84	44.89	46.00
Guittar, Theo. . .	Council B.	...	882	1,013	189.50	84.57	37.81	66.82	15.00
O'Keeffe, John . .	Creston	...	815	476	129.10	69.77	43.67	15.66	10.00
Hare, C. H. . . .	Oskaloosa	...	1,151	847	199.80	87.45	87.34	25.01	47.50
Total.	...	12,691	17,319	\$3,001.00	\$1,194.77	\$ 918.22	\$ 935.48	\$ 612.00	

* Salary and expenses of F. O. Udall exceeded amount of fees collected by him by \$37.47.

REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF JULY, 1902.

Inspector.	Address.	No. bbls. oil rejected.	No. bbls. oil approved.	No. bbls. gas-oil line rejected for illuminating purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper branding barrels.
Pickell, H. M....	Des Moines	1,641	2,092	373.30	\$ 100.00	\$ 93.30	\$ 177.00	\$ 75.00	
Rogers, C. S.	Mt. Pleasant	780	1,422	220.20	92.55	107.17	30.48	70.00	
Cameron, E. I.	Davenport.	1,585	1,536	312.10	100.00	115.40	93.70	85.00	
Burch, Leroy.....	Cedar Rapids	1,543	1,570	311.80	100.00	99.18	115.62	75.00	
* Whitney, A. E.	Fayette	1,799	910	270.90	89.15	91.99	89.76	57.50	
* Udall F. O.	Dubuque	14	451	46.51	10.85	18.00	17.65	17.50	
Santee, R. A.	Cedar Falls	1,093	1,787	285.00	100.00	40.00	145.00	25.00	
§ Morgan, S. W.	Marshalltown.	1,246	609	185.50	83.88	35.08	54.64	20.00	
Rogers, F. B.	Britt	753	1,303	306.10	89.02	29.62	87.46	10.00	
+ Chantland, W. T.	Badger	551	967	152.30	71.46	32.90	48.00	12.02	
+ Gullixson, C. F.	Bode	221	340	56.10	18.19	18.98	24.93	5.99	
Scott, W. J.	Ida Grove.	773	783	155.00	76.40	43.76	35.44	20.00	
Welch, W. A.	Sioux City	1,322	1,554	247.60	100.00	88.72	94.88	46.00	
+ Brown, Ed. C.	Council Bl.	1,022	1,481	250.80	85.00	28.66	127.14	9.00	
+ Gulttar, Theo.	Council Bl.	110	.....	11.00	4.99	4.45	1.56	.50	
Currie, J. B.	Creston	683	1,248	197.10	83.77	31.19	79.14	10.00	
Seever, P. Gad.	Oskaloosa..	1,414	1,085	250.00	100.00	77.07	72.93	47.50	
Total.....		16,535	19,183	\$3,571.90	\$1,318.20	\$ 948.47	\$1,293.83	\$ 586.51	

* F. O. Udall continued to act as inspector July 1, to July 7 inclusive. Report of A. E. Whitney covers from July 7, to August 1.

+ C. F. Gullixson continued to act as inspector July 1, to July 10 inclusive. Report of W. T. Chantland covers from July 10, to August 1.

+ Theo. Gulttar continued to act as inspector July 1, to July 8 inclusive. Report of Ed. C. Brown covers from July 3, to August 1.

§ \$11.90 in fees by S. W. Morgan not collected in time to remit with this month's report.

REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF AUGUST, 1902.

Inspector.	Address.	No. bbls. oil rejected.	No. bbls. oil approved.	No. bbls. gas-oil line rejected for illuminating purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper branding barrels.
Pickell, H. M....	Des Moines	1,801	1,685	\$ 848.60	\$ 100.00	\$ 95.86	\$ 162.80	\$ 75.00	
Rogers, C. S.	Mt. Pleasant	1,432	1,876	280.80	100.00	108.96	71.84	70.00	
Cameron, E. I.	Davenport.	1,931	1,075	300.60	100.00	101.65	99.05	85.00	
Burch, Leroy.....	Cedar Rapids	1,895	1,424	331.90	100.00	101.86	180.54	75.00	
Whitney, A. E.	Fayette	1,838	808	264.00	100.00	118.88	51.27	75.00	
Santee, R. A.	Cedar Falls	1,217	1,707	292.40	100.00	50.88	142.02	25.00	
* Morgan, S. W.	Marshalltown	1,562	1,080	292.20	100.00	33.06	141.04	10.00	
Rogers, F. B.	Britt	1,289	1,154	244.30	98.57	47.48	96.25	10.00	
Chantland, W. T.	Badger	2,000	1,444	344.40	100.00	76.22	168.18	18.00	
Scott, W. J.	Ida Grove.	1,108	692	180.00	82.50	68.00	29.50	25.00	
Welch, W. A.	Sioux City	1,196	1,441	268.90	100.00	83.96	79.95	46.00	
Brown, Ed. C.	Council Bl.	1,539	1,157	271.10	100.00	39.30	131.80	15.00	
Currie, J. B.	Creston	1,587	1,048	268.50	100.00	45.66	117.84	10.00	
Seever, P. Gad.	Oskaloosa..	1,302	1,096	239.80	97.45	77.02	65.33	47.50	
Total.....		15,21,699	17,167	\$3,888.10	\$1,878.52	\$1,042.07	\$1,479.41	\$ 586.50	

* \$11.90 fees uncollected in July included in amount paid the state treasurer.

REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
SEPTEMBER, 1902.

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M.	Des Moines	.....	2,488	1,753	\$ 418.00	\$ 100.00	\$ 104.70	\$ 218.90	\$ 75.00
Rogers, C. S.	Mt. Pleas- ant. ....	.....	1,008	1,261	230.00	94.15	104.70	27.69	70.00
Cameron, E. I.	Davenport.	.....	2,861	1,101	846.20	100.00	100.49	145.71	85.00
Burch, Leroy	Cedar Rap- ids .....	.....	1,607	1,794	340.10	100.00	91.49	148.61	75.00
Whitney, A. E.	Fayette	.....	1,910	864	277.40	100.00	116.58	61.07	75.00
Santee, R. A.	Cedar Falls	.....	1,153	1,893	253.60	100.00	45.22	110.57	25.00
Morgan, S. W.	Marshall- town .....	.....	1,865	664	252.90	100.00	56.56	116.34	10.00
Rogers, F. B.	Britt .....	.....	1,827	940	226.70	94.20	47.52	84.98	10.00
Chantland, W. T.	Badger	.....	2,650	1,168	371.30	100.00	50.52	190.78	18.00
Scott, W. J.	Ida Grove	.....	1,241	423	166.40	79.10	70.64	16.66	25.00
Welch, W. A.	Sioux City	.....	1,551	1,275	232.60	100.00	83.50	99.30	46.00
Brown, E. I. C.	Council B.	.....	1,597	900	249.70	99.92	47.81	102.47	15.00
Currie, J. B.	Oreston	.....	627	1,018	194.50	85.12	21.80	87.08	10.00
Seever, P. Gad.	Oskaloosa	.....	1,729	962	266.10	100.00	84.71	81.89	47.50
Total. ....	.....	.....	28,256	15,471	\$3,872.70	\$1,853.49	\$1,082.66	\$1,496.56	\$53.50

REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
OCTOBER, 1902.

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M.	Des Moines	.....	2,741	1,591	\$433.20	\$100.00	\$105.65	\$227.55	\$75.00
Rogers, C. S.	Mt. Pleas't	.....	1,990	690	245.00	100.00	136.13	28.87	70.00
Cameron, E. I.	Davenport.	.....	3,864	1,459	532.30	100.00	104.62	327.68	85.00
Burch, Leroy	Cedar	.....	.....	.....	.....	.....	.....	.....	.....
Whitney, A. E.	Rapids .....	.....	3,293	1,385	467.80	100.00	111.43	253.37	75.00
Santee, R. A.	Fayette	.....	2,311	590	340.10	100.00	129.51	110.59	75.00
Morgan, S. W.	Cedar Falls	.....	2,634	834	316.80	100.00	56.71	190.09	25.00
Rogers, F. B.	Marshall- town .....	.....	2,594	1,164	399.80	100.00	22.20	247.60	10.00
Chantland, W. F.	Britt .....	.....	1,627	1,400	302.70	100.00	61.39	141.37	10.00
Scott, W. J.	Badger	.....	1,590	1,034	239.40	100.00	59.33	100.07	18.00
Welch, W. A.	Ida Grove	.....	1,127	393	172.50	80.57	63.09	23.34	25.00
Brown, Ed. C.	Sioux City	.....	5,478	1,884	336.20	100.00	99.38	136.82	46.00
Currie, J. B.	Council B.	.....	942	1,616	245.80	98.95	35.88	111.47	15.00
Seever, P. Gad.	Oreston	.....	1,597	649	251.00	100.00	59.74	100.56	10.00
.....	Oskaloosa	.....	2,789	1,186	397.50	100.00	106.16	191.35	57.50
Total. ....	.....	.....	32,317	14,890	\$4,720.70	\$1,379.52	\$1,146.65	\$2,194.53	\$506.50

REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF NOVEMBER, 1902.

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M.	Des Moines	8,288	1,185	426.80	\$100.00	\$106.65	\$380.15	\$75.00	
Rogers, O. S.	Mt. Pleasant	1,715	864	257.90	100.00	132.64	85.26	70.00	
Cameron, E. I.	Davenport	2,660	798	345.80	100.00	107.88	137.42	85.00	
Burch, Leroy	Cedar Rapids ..	1,547	288	188.00	83.25	96.75	.....	64.64	
Whitney, A. E.	Fayette	1,844	428	227.20	94.80	122.58	10.57	75.00	
Santee, R. A.	Cedar Falls	1,606	1,141	264.70	100.00	46.62	118.08	25.00	
Morgan, S. W.	Marshalltown ..	2,379	506	297.50	100.00	21.21	166.29	10.00	
Rogers, F. B.	Britt	1,824	482	280.00	95.15	60.61	74.84	10.00	
Chantland, W. T.	Badger	1,711	537	239.80	94.95	61.55	73.80	19.00	
Scott, W. J.	Ida Grove	1,777	305	208.20	89.55	94.94	23.71	25.00	
Welch, W. A.	Sioux City	2,082	251	298.00	100.00	98.98	60.64	46.00	
Brown, Ed C.	Council Bl.	1,928	587	246.00	99.00	53.24	98.76	15.00	
Currie, J. B.	Creston	1,159	528	168.70	79.67	46.05	42.98	10.00	
Seever, P. Gad	Oskaloosa	2,180	364	251.40	100.00	84.14	72.26	87.50	
Total		27,480	8,721	\$3,620.10	\$1,885.87	\$1,185.97	\$1,143.26	\$567.14	

REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF DECEMBER, 1902.

Inspector.	Address.	No. bbls. oil re- jected.	No bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M.	Des Moines		4,823	1,164	\$ 596.70	\$ 100.00	\$ 105.25	\$ 596.45	\$ 75.00
Rogers, C. S.	Mt. Pleasant	298	8,342	391	403.10	100.00	140.69	162.41	70.00
Cameron, E. I.	Davenport		1,958	892	285.00	100.00	100.88	84.17	85.00
Burch, Leroy	C. Rapids		1,857	485	284.20	96.05	118.06	20.12	75.00
Whitney, A. E.	Fayette		2,534	392	292.60	100.00	183.81	53.79	75.00
Santee, R. A.	Cedar Falls		1,921	646	256.70	100.00	54.28	102.48	25.00
Morgan, S. W.	Marshalltown		3,046	384	388.00	100.00	44.17	243.88	10.00
Rogers, F. B.	Britt		1,575	596	216.10	91.52	60.62	54.96	10.00
Chantland, W. T.	Badger		1,974	591	257.00	100.00	60.67	96.88	18.00
*Scott, W. J.	Ida Grove		1,427	287	171.40	80.85	98.58	.....	25.00
Welch, W. A.	Sioux City		2,475	656	318.10	100.00	94.17	118.98	46.00
Brown, Ed C.	Council Bl.		2,039	374	241.80	97.82	65.62	77.96	15.00
Currie, J. B.	Creston		2,023	501	252.40	100.00	60.96	82.44	10.00
Seever, P. Gad.	Oskaloosa		3,545	638	428.80	100.00	97.09	229.71	87.50
Total		298	84,619	8,457	\$4,636.40	\$1,865.74	\$1,252.56	\$1,725.56	\$565.50

* Salary and expenses of W. J. Scott exceeded amount of fees collected by him by \$7.43.

REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
JANUARY, 1903.

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M.	Des Moines	.....	4,064	916	\$ 495.00	\$ 100.00	\$ 115.10	\$ 279.90	\$ 79.00
Rogers, C. S.	Mt Pleasant	.....	2,584	546	408.00	100.00	129.41	178.59	70.00
Cameron, E. I.	Davenport.	.....	2,196	889	308.20	100.00	107.18	96.02	85.00
Burch, Leroy.	C. Rapids. 183	.....	2,670	845	864.90	100.00	104.80	160.50	75.00
Whitney, A. E.	Fayette. ....	.....	2,072	847	291.90	100.00	127.82	64.08	75.00
Santee, R. A.	Cedar Falls	.....	1,580	907	263.00	100.00	47.55	106.05	25.00
Morgan, S. W.	Marshall- town. ....	.....	7,29	648	887.20	100.00	41.92	195.28	10.00
Rogers, F. B.	Britt. ....	.....	1,570	1,119	298.90	100.00	48.48	120.48	10.00
Chantland, W. T.	Badger. ....	.....	1,774	775	254.90	100.00	62.45	92.45	18.00
Scott, W. J.	Ida Grove.	.....	1,678	541	221.40	92.85	91.00	81.95	25.00
Welch, W. A.	Sioux City.	.....	2,498	719	821.20	100.00	111.56	109.64	47.25
Brown, Ed. C.	Council Bl.	.....	1,587	896	243.30	98.83	51.29	98.68	16.00
Currie, J. B.	Creston	.....	2,063	696	275.90	100.00	60.50	115.81	10.00
Seever, P. Gad.	Oskaloosa.	.....	3,864	530	883.40	100.00	100.34	188.06	57.50
Total. ....	.....	183	83,245	10,899	\$4,437.70	\$1,891.18	\$1,190.53	\$1,636.99	\$ 602.75

REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
FEBRUARY, 1903.

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M.	Des Moines	.....	2,604	1004	\$ 366.80	\$ 100.00	\$ 100.75	\$ 166.05	\$ 75.00
Rogers, C. S.	Mt Pleasant	.....	1,966	392	235.80	96.45	122.37	16.98	70.00
Cameron, E. I.	Davenport.	.....	2,435	981	341.00	100.00	98.86	142.74	85.00
Burch, Leroy.	Cr. Rapids.	.....	1,879	637	251.00	100.00	116.03	35.57	75.00
Whitney, A. E.	Fayette. ....	.....	2,012	481	249.30	99.83	115.05	34.42	75.00
Santee, R. A.	Cedar Falls	107	1,682	800	258.90	100.00	47.80	111.10	25.00
Morgan, S. W.	Marshalltown	.....	1,917	664	258.10	100.00	29.31	128.79	10.00
Rogers, F. B.	Britt. ....	.....	1,838	622	246.00	99.00	73.92	73.08	10.00
Chantland, W. T.	Badger. ....	.....	1,171	550	172.10	80.52	47.12	44.46	18.00
*Scott, W. J.	Ida Grove.	.....	964	365	182.90	70.70	68.20	.....	25.00
Welch, W. A.	Sioux City.	1	2,359	658	301.80	100.00	122.30	79.50	47.25
Brown, Ed. C.	Co. Bluffs.	.....	1,825	850	267.50	100.00	46.70	120.80	15.00
Currie, J. B.	Creston	111	1,180	145	143.60	73.40	54.13	16.07	10.00
Seever, P. Gad.	Oskaloosa.	.....	2,588	495	303.30	100.00	79.77	123.53	57.50
Total. ....	.....	219	25,430	8,644	\$3,529.30	\$1,819.90	\$1,122.81	\$1,083.09	\$597.75

*Salary and expenses of W. J. Scott exceed amount of fees collected by him by \$8.00.

**REPORT OF INSPECTIONS, SALARY AND EXPENSE FOR THE MONTH OF
MARCH, 1908.**

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M.	Des Moines	2,337	1,807		\$ 370.40	\$ 100.00	\$ 94.60	\$ 175.80	\$ 75.00
Rogers, C. S.	Mt. Pleas't	883	993		188.10	83.53	100.51	4.08	70.00
Cameron, E. I.	Davenport	1,813	1,631		347.40	100.00	93.74	153.66	85.00
Burch, Leroy	Cedar Rap.	1,710	1,051		276.10	100.00	91.35	84.75	75.00
Whitney, A. E.	Fayette	1,825	1,114		293.90	100.00	107.99	85.91	75.00
Santee, R. A.	Cedar Falls	1,609	1,053		296.20	100.00	44.08	122.12	25.00
Morgan, S. W.	Marsh'llt'n	2,397	1,271		363.80	100.00	26.86	236.94	10.00
Rogers, F. B.	Britt	1,233	982		221.50	92.87	45.34	83.29	10.00
Chantland, W. T.	Badger	789	1,434		222.50	93.12	48.00	81.38	18.00
*Scott, W. J.	Ida Grove.	639	628		126.70	60.17	53.15	1.38	25.00
Welch, W. A.	Sioux City	1	2,283	750	303.90	100.00	100.90	103.00	47.25
Brown, Ed C.	Co. Bluffs	1,319	893		221.20	92.80	46.51	81.89	15.00
*Currie, J. B.	Creston	111	139	.....	25.00	6.25	.....	18.75	.....
Currie, J. B.	Creston	1,571	835		243.60	93.40	55.90	88.30	10.00
SeEVERS, P. Gad.	Oskaloosa.	2,000	1,874		453.40	100.00	75.24	275.16	57.50
Total.		112,233	137	15,938	\$3,923.70	\$1,936.14	\$ 988.17	\$1,590.39	\$ 597.75

*February inspection. Inspection and fees in dispute and not collected in time to be included in report for that month.

**REPORT OF INSPECTIONS, SALARY AND EXPENSE FOR THE MONTH OF
APRIL, 1908.**

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M.	Des Moines		2,816	1,684	\$ 448.00	\$ 100.00	\$ 96.00	\$ 252.00	\$ 75.00
Rogers, C. S.	Mt. Pleas't	43	1,296	1,384	272.30	100.00	105.99	66.31	70.00
Cameron, E. I.	Davenport		2,267	1,550	331.70	100.00	97.00	134.70	85.00
Burch, Leroy	Cedar Rap.	118	1,050	1,223	239.10	97.27	82.59	59.24	75.00
Whitney, A. E.	Fayette		1,837	1,172	252.90	100.00	111.81	41.09	75.00
Santee, R. A.	Cedar Falls		1,273	1,242	250.50	100.00	40.78	109.72	25.00
Morgan, S. W.	Marsh'llt'n		2,117	1,150	326.70	100.00	20.19	206.51	10.00
Rogers, F. B.	Britt		1,206	1,232	243.80	93.45	46.84	93.51	10.00
Chantland, W. T.	Badger		1,238	1,246	248.40	99.60	47.62	101.28	18.00
Scott, W. J.	Ida Grove.		1,354	970	232.40	95.00	86.79	50.01	30.00
Welch, W. A.	Sioux City		1,681	1,004	298.50	100.00	99.24	69.26	47.25
Brown, Ed C.	Co. Bluffs		1,513	931	244.60	93.65	37.21	108.74	15.00
Currie, J. B.	Creston		604	591	119.50	68.37	23.29	27.84	10.00
*Shivvers, H.	Knoxville.		2,330	912	324.20	100.00	95.73	128.47	67.50
Total.		161	22,104	16,261	\$3,852.60	\$1,257.94	\$ 990.98	\$1,503.68	\$ 612.75

*Appointed to fill vacancy caused by resignation of P. Gad SeEVERS.

**REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
MAY, 1903.**

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M. . .	Des Moines	..	1,674	1,740	\$ 341.40	\$ 100.00	\$ 94.55	\$ 146.85	\$ 75.00
Rogers, C. S. . .	Mt. Pleas- ant.	..	973	1,593	253.60	100.00	96.26	57.34	70.00
Cameron, E. I. .	Davenport	..	1,934	2,158	409.20	100.00	94.47	214.73	85.00
Burch, Leroy . .	Cedar Rap- ids	..	1,641	1,890	354.00	100.00	94.89	159.11	75.00
Whitney, A. E. .	Fayette	..	1,919	1,601	352.00	100.00	108.76	143.24	75.00
Santee, R. A. . .	Cedar Falls	..	1,394	1,352	271.00	100.00	42.46	129.14	25.00
Morgan, S. W. . .	Marshall- town	..	1,288	1,750	303.80	100.00	31.23	172.57	10.00
Rogers, F. B. . .	Britt	..	690	1,045	173.50	80.87	52.56	60.07	10.00
Chantland, W. T.	Badger. . .	..	1,444	793	223.70	93.42	55.15	75.38	18.00
Scott, W. J. . . .	Ida Grove	..	1,287	335	162.20	78.07	75.82	8.31	80.00
Welch, W. A. . .	Sioux City	..	1,906	1,067	297.30	100.00	97.40	99.84	48.50
Brown, Ed. C. . .	Co. Bluffs	..	815	720	153.50	75.87	42.58	35.05	15.00
Currie, J. B. . .	Creston	..	732	1,025	175.70	81.42	33.07	61.21	10.00
Shivvers, H. . . .	Knoxville	..	1,135	880	201.50	87.87	95.74	17.80	67.50
Total.			18,802	17,928	\$3,673.00	\$1,297.52	\$95.00	\$1,380.48	\$614.00

**REPORT OF INSPECTIONS, SALARY, AND EXPENSE FOR THE MONTH OF
JUNE, 1903.**

Inspector.	Address.	No. bbls. oil re- jected.	No. bbls. oil ap- proved.	No. bbls. gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
Pickell, H. M. . .	Des Moines	..	1,764	2,000	\$ 376.40	\$ 100.00	\$ 95.80	\$ 180.60	\$ 75.00
Rogers, C. S. . .	Mt. Pleas'n't	..	963	953	181.90	82.98	88.12	10.80	70.00
Cameron, E. I. .	Davenport	..	2,520	1,781	430.10	100.00	101.01	229.09	85.00
Burch, Leroy . .	Cedar Rps	..	1,149	2,397	354.00	100.00	89.17	165.43	75.00
Whitney, A. E. .	Fayette . .	..	1,908	1,040	269.30	100.00	106.18	63.12	75.00
Santee, R. A. . .	Cedar Falls	..	1,576	1,252	232.80	100.00	44.13	138.67	25.00
Morgan, S. W. . .	Marshalltn	..	1,164	1,390	255.30	100.00	21.49	133.81	10.00
Rogers, F. B. . .	Britt	..	1,374	1,155	252.90	100.00	51.54	101.36	10.00
Chantland, W. T.	Badger . . .	..	1,152	1,229	237.20	96.80	47.37	93.03	18.00
*Scott, W. J. . . .	Ida Grove	..	591	587	117.80	66.92	51.15	..	80.00
Welch, W. A. . .	Sioux City	..	1,887	1,249	312.60	100.00	101.74	110.86	47.25
Brown, Ed. C. . .	Co. Bluffs	..	852	777	162.90	78.22	33.39	51.29	15.00
Currie, J. B. . .	Creston	..	1,076	777	185.30	83.82	32.99	68.49	10.00
Shivvers, H. . . .	Knoxville	..	1,509	1,150	272.50	100.00	104.73	63.77	67.50
Total.			19,139	17,777	\$3,691.00	\$1,308.74	\$98.81	\$1,414.32	\$612.75

*Salary and expenses of W. J. Scott exceeded amount of fees collected by him by 27 cents.

**CONSOLIDATION OF INSPECTION BY MONTHS FOR THE YEAR BEGINNING
JULY 1, 1901 AND ENDING JUNE 30, 1902.**

Months.	No. barrels oil re- jected.	No. barrels oil ap- proved.	No. barrels gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
1901.								
July.....	15	10,844	17,174	\$ 2,801.80	\$ 1,206.40	\$ 885.18	\$ 710.22	\$ 592.50
August.....	5	17,675	21,915	3,980.10	1,354.87	1,019.81	1,585.42	643.00
September.....	5	28,508	12,842	5,334.90	1,857.06	1,174.39	1,408.46	733.00
October.....	1	24,710	11,089	5,590.90	1,284.01	1,148.84	1,188.08	632.00
November.....	1	28,584	10,851	5,664.60	1,529.09	1,272.54	1,062.55	627.00
December.....	239	32,654	9,890	4,224.80	1,340.08	1,295.26	1,598.96	607.00
1902.								
January.....	287	83,833	7,531	4,666.00	1,888.42	1,859.72	1,917.86	624.50
February.....	111	27,138	7,000	5,424.90	1,279.48	1,155.20	990.25	565.50
March.....	162	28,728	11,636	5,557.80	1,811.17	1,119.10	1,127.53	612.50
April.....	5	19,736	12,950	5,374.50	1,243.92	1,023.61	951.37	607.00
May.....	5	15,721	12,674	2,540.00	1,208.18	937.87	658.50	601.50
June.....	5	12,691	17,819	5,001.00	1,194.77	918.22	935.48	612.00
Total.....	766	276,677	151,868	\$42,981.10	\$15,608.08	\$18,365.76	\$14,019.18	\$ 7,887.50

Salary and expenses exceeded amount of fees collected by \$31.82.

**CONSOLIDATION OF INSPECTION BY MONTHS FOR THE YEAR BEGINNING
JULY 1, 1902, AND ENDING JUNE 30, 1903.**

Months.	No. barrels oil rejected.	No. barrels oil approved.	No. barrels gaso- line rejected for illumina- ting purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helper brand- ing barrels.
1902								
July.....	1	16,535	19,188	\$ 8,571.90	\$ 1,818.20	\$ 948.47	\$ 1,293.33	\$ 594.51
August.....	15	21,649	17,167	8,888.10	1,378.52	1,042.07	1,479.41	586.50
September.....	1	23,256	15,471	8,872.70	1,363.49	1,082.65	1,430.56	586.50
October.....	1	32,817	14,890	4,720.70	1,879.52	1,146.65	2,194.53	596.50
November.....	1	27,490	9,721	8,620.10	1,345.87	1,185.97	1,142.26	587.14
December.....	288	34,619	8,457	4,386.40	1,365.74	1,232.56	1,725.58	594.50
1903								
January.....	139	83,245	10,899	4,427.70	1,891.18	1,199.53	1,336.99	602.75
February.....	219	26,430	8,644	3,529.80	1,819.90	1,122.81	1,068.00	597.75
March.....	112	23,187	15,983	3,923.70	1,396.14	988.17	1,590.90	597.75
April.....	161	22,104	16,261	3,452.60	1,357.94	990.96	1,608.63	612.75
May.....	1	18,942	17,923	3,673.00	1,297.62	995.00	1,830.48	614.00
June.....	1	19,139	17,777	3,691.60	1,808.74	968.81	1,414.32	612.75
Total.....	929	298,813	171,366	\$47,107.80	\$16,142.76	\$12,828.17	\$18,155.62	\$ 7,177.40
Total for bienn- ial period.....	1695	575,490	323,234	\$90,088.90	\$31,750.79	\$30,188.93	\$32,174.75	\$14,584.90

Salary and expenses exceeded amount of fees collected by \$18.75.

CONSOLIDATION OF INSPECTIONS, SALARY, AND EXPENSE OF EACH INSPECTOR FOR YEAR ENDING JUNE 30, 1903; ALSO PER CENT OF EXPENSES AND AMOUNT PAID TREASURER OF STATE RELATIVE TO AMOUNT OF FEES RECEIVED.

Inspector.	Address.	Number barrels oil rejected.	Number barrels oil approved.	Number barrels gasoline rejected for illuminating purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid dep-uty and helpers branding barrels.	Per cent of expenses to amount of fees received.	Per cent of amount paid treasurer of state to amount of fees received.
Pickell, H. M.	Des Moines.	118	80,180	17,820	\$ 4,789.80	\$ 1,820.00	\$ 1,887.80	\$ 2,262.00	\$ 1,010.00	98.81	48.84
Weinstein, Louis.	Burlington.	.....	17,866	10,679	2,804.50	1,091.40	1,120.52	562.08	800.00	40.81	23.52
Crawshaw, Adam.	Clinton.	.....	27,069	12,927	8,983.61	1,810.00	1,888.42	1,468.18	1,140.00	83.89	86.08
Beunay, S. E.	Mt. Vernon.	.....	22,287	14,337	3,669.40	1,179.86	1,449.99	1,029.55	900.00	89.89	23.15
Udall, F. O.	Dubuque.	112	72,064	7,432	2,997.80	1,127.87	1,471.06	1,450.40	900.00	49.69	14.87
Bartman, W. D.	Waterloo.	.....	16,232	14,019	3,086.20	1,147.76	683.48	1,417.42	806.50	18.51	46.98
Bishop, J. B. M.	Toledo.	143	23,094	10,481	3,986.80	1,178.09	403.48	1,323.73	241.00	19.56	46.14
Meyers, C. K.	Mason City.	.....	15,183	8,801	4,684.70	1,048.08	404.06	1,038.67	144.00	16.49	31.81
Gullixson, C. F.	Bode.	.....	16,885	10,684	721.90	1,040.08	772.27	808.60	216.00	23.48	31.84
Young, J. F.	Dodge.	.....	14,282	8,263	1,953.80	984.58	697.44	428.03	283.00	82.49	20.06
Weich, W. A.	Sioux City.	.....	14,149	12,470	1,821.50	1,156.87	1,152.83	432.70	932.00	82.51	32.06
Guitart, Theo.	Council Bluffs.	117	17,812	1,066	3,891.10	1,110.80	10.84	1,049.80	180.00	28.16	57.46
O'Keefe, John.	Creston.	.....	18,878	1,066	2,078.00	861.90	584.46	711.89	120.00	28.10	57.46
Hare, C. H.	Oskaloosa.	106	20,418	8,213	2,579.00	1,148.08	1,174.70	561.82	870.00	40.79	19.51
Total.	.....	766	276,677	151,986	\$42,981.10	\$15,908.73	\$ 13,865.76	\$ 14,019.18	\$ 7,887.50	81.18	82.65

CONSOLIDATION OF INSPECTIONS, SALARY AND EXPENSE OF EACH INSPECTOR FOR YEAR ENDING JUNE 30, 1933; ALSO PER CENT OF EXPENSES AND AMOUNT PAID TREASURER OF STATE RELATIVE TO AMOUNT OF FEES RECEIVED.

Inspector.	Number barrels oil rejected.	Number barrels oil approved.	Number barrels gasoline rejected for illuminating purposes.	Amount of fees received.	Amount of fees retained.	Expense.	Amount paid treasurer of state.	Amount paid deputy and helpers branding barrels.	Per cent of expenses to amount of fees received.	Per cent of amount paid treasurer of fees received.
Pickell, H. M.	361	31,931	18,111	\$ 5,007.20	\$ 1,200.00	\$ 1,211.15	\$ 2,508.05	\$ 604.10	24.18	51.84
Rogers, C. B.		19,234	11,773	\$ 1,361.30	\$ 1,140.66	\$ 1,363.01	\$ 1,963.67	\$ 600.00	23.17	21.81
Cameron, E. I.		27,321	15,823	\$ 2,334.70	\$ 1,940.07	\$ 1,921.08	\$ 1,918.67	\$ 1,030.00	23.36	44.14
Burch, Leroy	251	21,546	14,963	\$ 2,334.00	\$ 1,776.57	\$ 1,754.47	\$ 1,516.80	\$ 888.94	22.36	32.01
Wittmer, A. E.		23,524	10,297	\$ 3,362.10	\$ 1,183.33	\$ 1,384.81	\$ 1,516.80	\$ 888.94	22.36	32.01
Udall, F. O.		18,357	14,181	\$ 2,982.50	\$ 1,105.50	\$ 1,183.00	\$ 1,516.80	\$ 888.94	22.36	32.01
Santee, E. A.	107	24,273	14,181	\$ 2,982.50	\$ 1,105.50	\$ 1,183.00	\$ 1,516.80	\$ 888.94	22.36	32.01
Morgan, B. W.		24,273	14,181	\$ 2,982.50	\$ 1,105.50	\$ 1,183.00	\$ 1,516.80	\$ 888.94	22.36	32.01
Rogers, F. B.		17,919	12,030	\$ 2,982.50	\$ 1,105.50	\$ 1,183.00	\$ 1,516.80	\$ 888.94	22.36	32.01
Chandler, W. T.		17,919	12,030	\$ 2,982.50	\$ 1,105.50	\$ 1,183.00	\$ 1,516.80	\$ 888.94	22.36	32.01
Gallison, C. F.		13,221	6,544	\$ 2,047.50	\$ 941.73	\$ 1,183.00	\$ 1,516.80	\$ 888.94	22.36	32.01
Wich, W. J.		23,690	11,945	\$ 2,556.70	\$ 1,200.00	\$ 1,183.00	\$ 1,516.80	\$ 888.94	22.36	32.01
Reich, W. A.	2	16,896	11,087	\$ 2,797.70	\$ 1,184.55	\$ 1,183.00	\$ 1,516.80	\$ 888.94	22.36	32.01
Brown, Ed C.	15	15,110	11,087	\$ 2,797.70	\$ 1,184.55	\$ 1,183.00	\$ 1,516.80	\$ 888.94	22.36	32.01
Gutter, Theo.	222	15,611	9,131	\$ 2,494.40	\$ 1,081.22	\$ 1,183.00	\$ 1,516.80	\$ 888.94	22.36	32.01
Quarrie, J. B.	1	21,541	8,255	\$ 2,681.70	\$ 1,087.45	\$ 1,183.00	\$ 1,516.80	\$ 888.94	22.36	32.01
Seever, P. Gad		5,084	2,948	\$ 793.20	\$ 287.87	\$ 294.20	\$ 214.15	\$ 203.50	37.25	28.82
Shivers, H.										
Total	929	298,813	171,836	\$ 47,107.80	\$ 15,142.73	\$ 12,833.17	\$ 18,155.62	\$ 7,177.40	27.22	38.53

* F. O. Udall continued to act as inspector July 1st to July 7th, inclusive.

† C. F. Gullison continued to act as inspector July 1st to July 10th, inclusive.

‡ Theo. Gutter continued to act as inspector July 1st to July 3d, inclusive.

§ Reports of P. Gad Seever covers nine months ending March 31, 1933.

|| Reports of H. Shivers covers three months, April 1 to June 30, 1933, inclusive.

FIRST REPORT

OF THE

IOWA LIBRARY COMMISSION.

1900-1903.

PUBLISHED BY AUTHORITY OF THE GENERAL ASSEMBLY.

DES MOINES, IOWA:
BERNARD MURPHY, STATE PRINTER,
1904.

IOWA LIBRARY COMMISSION.

Office: The Capitol, Des Moines, Iowa.

MEMBERS EX OFFICIIS.

JOHNSON BRIGHAM, State Librarian, *President*.

RICHARD C. BARRETT, State Superintendent of Public Instruction.

GEORGE E. MACLEAN, President of the State University.

MEMBERS APPOINTED BY THE GOVERNOR.

MRS. HARRIET C. TOWNER, Corning.

MRS. JESSIE WAITE DAVIDSON, Burlington.

MRS. ELIZABETH S. NORRIS, Grinnell.

CAPT. W. H. JOHNSTON, Fort Dodge.

ALICE S. TYLER, *Secretary*, Des Moines.

LETTER OF TRANSMITTAL

To Honorable ALBERT B. CUMMINS, Governor of Iowa:

I have the honor to transmit herewith a "full report on library conditions and progress in Iowa," as required by section 5, chapter 173, laws of the Twenty-ninth General Assembly, being the First Report of the Iowa Library Commission.

ALICE S. TYLER,
Secretary Iowa Library Commission.

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PART I.

LIBRARY EXTENSION IN IOWA.

STATE OF IOWA

LIBRARY COMMISSION.

LIBRARY EXTENSION IN IOWA.

The period covered by this report, so far as the general activities of the Iowa Library Commission are concerned, is two years and nine months; the Commission was organized July 1, 1900, having been created by an act of the Twenty-eighth General Assembly, but activities did not begin until October 1st of that year. During the session of the General Assembly of 1902, the Commission law was entirely revised, providing for the transfer of the Traveling Library system from the State Library to the Library Commission. This revised law also provided a definite date for the first report, hence the uneven period covered by this report, which will hereafter be issued biennially.

The creation of a Library Commission for the State of Iowa was urged for several years before a law was enacted creating it, the promoters of library work feeling confident that a commission provided the most practical means for aggressive, systematic extension of library privileges to all the people of the State. Other States of the Union had thoroughly tested this plan for the advancement of library interests, hence it had passed the experimental stage as a method of accomplishing results, and had proved to be the most economical and direct method of advancing this important, educational work.

It had been seen that, as our public school system evolved, it was necessary to give direction and encouragement to it. This is done through the Department of Public Instruction in each State. In a similar though in a much smaller way, the library commission in each State gives direction and encouragement to library interests. Massachusetts was the first State to see the importance of fostering and encouraging this interest which has much to do in developing a sound and intelligent citizenship, and therefore the Massachusetts legislature created a Library Commission in 1890. The chief duty of this commission was to

use every effort to make good books accessible to all the people of that great commonwealth by means of free public libraries. Since that date nineteen other states have seen the importance of library development and have secured legislation providing for library commissions. In a large number of these States the Traveling Library is an important feature of commission work. The States now having library commissions are: Massachusetts, New Hampshire, Connecticut, Vermont, Wisconsin, Ohio, Georgia, New Jersey, Maine, Indiana, Kansas, Colorado, Minnesota, Pennsylvania, Michigan, Iowa, Idaho, Washington, Delaware and Nebraska.

"Differing materially in composition and in methods, their common aim is to inspire communities with a desire for library service, to foster zeal in library work, to aid by advice and example, to simplify methods and to act as an agency for the application of public spirit and private bounty in the direction of library interests."

The earnest interest of the Iowa Library Association, the Iowa Federation of Women's Clubs, the State Teachers' Association, the P. E. O. Society and kindred organizations in creating a favorable sentiment toward securing legislation for a library commission were potent factors in bringing about the passage of the law, and especially to the club women of Iowa are we largely indebted for the present encouraging conditions of library growth in Iowa.

Library progress has not, however, been confined to our own State, but is a part of the general movement throughout the country in behalf of free public libraries. The liberality of Mr. Andrew Carnegie in erecting library buildings, both in this country and abroad, has undoubtedly given an impetus to the library movement that it might not otherwise have had. While the public library would undoubtedly have grown in strength because of its recognized service to the community in the higher development of the people, nevertheless, the proffer of a building for housing the library serves as an incentive in many communities to establish a library. In this connection it may be said that the confusion arising in the minds of many people regarding the Carnegie library buildings is their inability to distinguish between the free public library as an *institution*, created under the State law, providing a growing collection of books for the free use of the people, and Mr. Carnegie's proposition to provide a building wherein to house these books. In our own State, the

free public library exists as a reality and as an influence in the community because the State of Iowa years ago provided by law for its establishment and maintenance by a municipal tax, whether it is in rented rooms or in a building of its own.

The influence of Mr. Carnegie's generosity can scarcely be estimated by those of us who are his contemporaries; but future generations will doubtless look back upon this period which has witnessed the erection of so many library buildings and this period of public library development as the "golden age" of libraries. Mr. Carnegie is reported to have said recently at a library dedication, "I think the free public library, maintained by the people, is fruitful in the extreme, because it gives nothing for nothing, because it helps only those who help themselves, because it does not sap the foundations of manly independence, because it does not pauperize, because it stretches a hand to the aspiring and places a ladder upon which they can ascend only by doing the climbing themselves."

Coincident with this, another marked influence in developing library affairs is the activity of library commissions in carrying forward aggressive library work. While the library commissions in the various states may not lay claim to having entirely created favorable library conditions, the practical need for a responsible center in each State for the dissemination of library information, the active work of library extension and the importance of directing library enthusiasm into wise and safe channels and holding up high ideals of the educational value of the free library, make the work of the library commissions definite and practical in developing that higher life of the State which relates to what man *is*, rather than what he *has*.

Mr. Melvil Dewey, Director of the State Library, Albany, N. Y., has said:

"No thoughtful man can question that it is a supreme concern to provide for our people the best of the literature of power which inspires and builds character and of the literature of knowledge which informs and builds prosperity. This can be done effectively and economically only through free public libraries. A limited number can buy or hire their books, but experience has proven that unless knowledge is as free as air or water, it is fearfully handicapped, and the State can not afford to allow even the smallest obstacle to remain between any of its citizens and the desire for either inspiration or information."

The activities of the Iowa Library Commission have developed as the demands of the work have required. The secretary has through correspondence and personal visits become acquainted

with library conditions in the State and every effort is made to encourage all cities in the State (of over 2,000 inhabitants) to take advantage of the law providing for a municipal tax. The demands upon the secretary include many phases of work among which are the following: Aiding in preliminary plans for the submission of a library tax to a vote; assisting boards of trustees and librarians in organizing libraries for a business-like administration; advising as to library records, accession, classification, shelf-list, loan system and catalogue; securing a competent organizer for properly organizing a library according to modern methods; conferring with library trustees regarding plans for new library buildings, with special reference to interior arrangements that provide supervision and economical administration; addressing teachers' meetings, women's clubs, public meetings, etc., on library subjects; selection of books; supervision of traveling libraries; direction of the summer library training school; keeping accurate records of work of the commission and all expenditures; correspondence on many subjects related to the above mentioned activities.

No change has occurred in the Commission since its organization, Capt. W. H. Johnston having been reappointed by Governor Cummins July 1, 1902, for the full term of six years. Meetings have been held at intervals of about three months and Mr. Johnson Brigham, State Librarian, has been re-elected president each year.

HOW A COMMUNITY MAY MAKE A BEGINNING.

In starting a public library the first step is to interest the people in the project. If a small group of people, or even one individual, is keenly alive to the necessity of having a public collection of books accessible to all the people of the community, personal work is necessary in order that the movement shall gather strength.

Sometimes an organization will take the initiative in the matter and appoint a committee to formulate plans, etc. The Young Men's Christian Association, the Women's Club, a church society or the teachers have often been the means of starting the movement. In several towns the various clubs have federated for this purpose. However, there are practical reasons why it is better to bring about the organization of a local library association for this especial purpose if possible, and hence after

personal work on the part of a few earnest people toward creating sentiment in its favor, it seems well to have a public meeting to which *all* citizens are invited, including both those who are and those who are not in other organizations, to form a library association; or, if not practicable to organize an association, to take formal steps toward voting a tax.

The provisions for establishing a free public library as given in sections 727-732, Title V, chapter 4, of the Code of Iowa, should be read carefully. The citizens can petition the city council to submit the question to a vote of the people at a general or special election. This petition will in a tangible way show the city council that a large number of citizens really want a free public library. Residents, both men and women, whether taxpayers or not, should sign this as a means of expressing approval of the project.

The following form is suggested in preparing such a petition for circulation:

To the Honorable Mayor and City Council of the City of
Iowa:

The undersigned citizens of the city of, Iowa, respectfully request your honorable body to submit to the legal voters of this city at the next city election, to be held on the day of, 190.., the question: "Shall a free public library be established?" as provided in section 727, Title V, chapter 4, of the Code of Iowa.

By a little effort a long list of signatures may be secured, and the presentation of the petition to the council will bring the matter definitely to their attention. Some one of the councilmen should be interested in advance and be ready to introduce a resolution to submit the question to the voters.

The following is a form of resolution which has been used in Iowa towns:

"Be it Resolved by the City Council of the City of, Iowa, That at the city election to be held in the city of, on the day of, 190.., there shall be submitted to the legal voters of said city the question whether a free public library shall be established in said city as provided in section 727 of Title V, of chapter 4, of the Code of Iowa. Said question shall be printed upon the ballots at said election in the form required by section 1106 of Title VI, of chapter 3, of the Code of Iowa, as follows: Shall a free public library be established?"

The resolution should be passed by the city council several weeks in advance of the election, in order that due notice of the election may be published in the local papers. The next step is to secure the necessary votes in favor of such establishment.

Here is the place for earnest, personal work, for a measure of this sort may easily be lost by mere indifference. Have a mass meeting and secure prominent local speakers to tell why a public library supported by tax is a good thing, and why every voter should support it.

As the question frequently arises regarding the legality of the women of Iowa voting on the question of a free public library, it is well for those who are interested in this subject to read section 1131, Title VI, chapter 3 of the Code. It is understood that the question of establishing a free public library involves the question of increasing the tax levy and therefore this falls within the class of elections at which women are entitled to vote. The clause is as follows:

Section 1131. Code of Iowa, 1897—*Voting by Women*. At all elections where women may vote, no registration of women shall be required, separate ballots shall be furnished for the question on which they are entitled to vote; a separate ballot box shall be provided in which all ballots cast by them shall be deposited, and a separate canvass thereof made by the judges of the election, and the returns thereof shall show such vote. The right of any citizen to vote at any city, town or school election, on the question of issuing any bonds for municipal or school purposes, and for the purpose of borrowing money, or on the question of increasing the tax levy, shall not be denied or abridged on account of sex. (25 G. A., ch. 39.)

After the electors have voted in favor of the establishment of a library the Code provides that a "board of library trustees consisting of nine members shall be appointed by the mayor, by and with the approval of the council," and that the "board of trustees shall, before the first day of August in each year, determine and fix the rate to be levied for the ensuing year for the maintenance of such library."

This board should be composed of high-minded, intelligent men and women, who have the good of the community at heart and are above petty intrigues. While a period of time will elapse before the tax levy is available, there will be the planning of the work and the selection of standard books of recognized merit and the choice of a librarian which should be duly considered. The success of the library as an institution will depend largely on the character and attainments of the librarian who comes in daily contact with the patrons. Whenever possible a librarian of training or experience should be secured, if funds are sufficient for this. A young woman of good education and pleasing manners and address can usually be found in every community whose tastes would lead her to undertake this work, and

a six weeks' course in the Iowa Summer Library School at the State University, would be the means of aiding her in undertaking the work with intelligence and helpfulness. The secretary of the library commission should be consulted in regard to questions of organization, and a regular library organizer can be recommended by the Commission to guide and assist the librarian in inaugurating the work. If the work is properly done at the beginning, it will not have to be done again when the library is larger and the question of modern organization becomes a task.

IN CASE OF CARNEGIE GIFTS.

In connection with the establishment of a free public library, the question of a gift of a Carnegie building is often involved. This is a distinct proposition, but *the conditions of a Carnegie gift can not be met by the Council until a vote of the people determines whether they desire to establish a library and provide a municipal tax for its support.* Then the council can take action on the acceptance of the gift of a building in which the library will be kept. *A library may exist without a building,* but a library building is of no possible use without the collection of books; hence, the important step before the acceptance of a Carnegie gift, in case no library exists in the town, is to vote on the fundamental proposition as provided by the Iowa State law, "Shall a free public library be established?" The vote is *not* taken on the acceptance of the Carnegie gift, but on the establishment of a library. The acceptance of the gift rests with the city council.

LIBRARY GROWTH.

The statistics of libraries in the State, as published in the Iowa Official Register, which is issued annually, showed in the issue of 1893 that there were fifteen free public libraries in the State supported by municipal tax in 1892. Inasmuch as this was the first attempt to gather the library statistics of the State, it was necessarily incomplete, as many libraries did not report. The following year nineteen were reported. At the time of the creation of the Library Commission in 1900 there were reported forty-eight free public libraries. At the time of this report, July, 1903, there are seventy-seven free public libraries supported by municipal tax; the last Official Register also reported at the close of 1902 twenty-two libraries connected with State in-

stitutions, thirty-six colleges and academic libraries, thirty-two association and subscription libraries, eleven miscellaneous libraries and seventy-seven school libraries of over 200 volumes each.

Under the laws of our State it is necessary that the people in each community shall vote upon the question, "Shall a free public library be established?" In conformity with this law the following towns have voted favorably on the question during the period covered by this report: Ames, Anamosa, Atlantic, Centerville, Clinton, Colfax, Davenport, Denison, Dubuque, Eagle Grove, Glenwood, Hawarden, Hawkeye, Jefferson, Leon, Marion, Maquoketa, Marengo, Monticello, Mount Pleasant, Muscatine, Nashua, Newton, Onawa, Oskaloosa, Ottumwa, Perry, Sanborn, Shenandoah, Stuart, Tipton, Vinton, West Liberty. In some cases these were association or subscription libraries, and the change to a library supported by a municipal tax puts them on a permanent basis. The Library Commission most earnestly urges communities to vote upon the establishment and maintenance of a library under the State law as a separate proposition before applying to Mr. Carnegie for the gift of a building, thus permitting the question of the institution to stand or fall on its own merits as a public collection of books without regard to a building in which it may be housed.

LIBRARY BUILDINGS.

The first library building erected by Mr. Carnegie in Iowa was at Fairfield, in 1893. The gift was secured by Senator James F. Wilson and cost \$40,000. It was the first library building erected by Mr. Carnegie west of Allegheny City, Pa., and one of the few contributed without any conditions as to support.

Including that building, he has given library buildings to forty-seven towns in the State (three of them college libraries), the buildings either being already erected or now in process of planning or erection.

The importance of library buildings being well planned, so that they are adapted to the needs of the public and can be economically administered with oversight from a central point by the librarian, needs to be emphasized over and over until building committees realize the importance of employing competent architects. Some of these buildings, with their serious faults and inconveniences and their glaring architectural defects

will stare us in the face long after Mr. Carnegie has passed away and the building committees are forgotten, while others will be a source of joy to the community, both for architectural beauty and for convenience, ease of administration and adaptation to use.

GIFTS FOR LIBRARY BUILDINGS IN IOWA PREVIOUS TO JULY 1, 1908.

FROM MR. ANDREW CARNEGIE.

Place.	Institution.	Amount.
Algona	Free Public Library	\$ 10,000
Ames	Free Public Library	10,000
Atlantic	Free Public Library	12,500
Carroll	Free Public Library	10,000
Cedar Falls	Free Public Library	15,000
Cedar Rapids	Free Public Library	75,000
Chariton	Free Public Library	10,000
Charles City	Free Public Library	12,500
Clinton	Free Public Library	45,000
Council Bluffs	Free Public Library	70,000
Davenport	Free Public Library	75,000
Denison	Free Public Library	10,000
Dubuque	Free Public Library	60,000
Eagle Grove	Free Public Library	10,000
Eldora	Free Public Library	10,000
Estherville	Free Public Library	10,000
Fairfield	Free Public Library	40,000
Fayette	Upper Iowa University	25,000
Ft. Dodge	Free Public Library	80,000
Glenwood	Free Public Library	7,000
Grinnell	Iowa College	50,000
Hampton	Free Public Library	10,000
Hawarden	Free Public Library	5,000
Indianola	Free Public Library	10,000
Iowa City	Free Public Library	85,000
Iowa Falls	Free Public Library	10,000
Jefferson	Free Public Library	10,000
Le Mars	Free Public Library	12,500
Manchester	Free Public Library	10,000
Maquoketa	Free Public Library	10,000
Marengo	Free Public Library	10,000
Marion	Free Public Library	10,000
Marshalltown	Free Public Library	80,000
Mason City	Free Public Library	25,000
Monticello	Free Public Library	10,000
Mt. Pleasant	Free Public Library	12,500
Mt. Vernon	Cornell College	40,000
Newton	Free Public Library	10,000
Oakalocsa	Free Public Library	20,000
Ottumwa	Free Public Library	50,000
Perry	Free Public Library	10,000
Shenandoah	Free Public Library	10,000
Spencer	Free Public Library	10,000
Tipton	Free Public Library	10,000
Vinton	Free Public Library	10,000
Waterloo	Free Public Library	40,000
Waverly	Free Public Library	10,000
Total	...	\$ 1,027,00

FROM IOWA CITIZENS.

Place.	Donor.	Amount.
Anamosa	D. A. R. and citizens	\$ 10,000
Boone	Hon. C. J. A. Ericson	12,000
Burlington	Philip M. Crapo (supplementing city tax)	20,000
Centerville	Gen. F. M. Drake	85,000
Corning	Mrs. Mary A. Rawson	2,500
Dubuque	Various citizens (supplementing the Carnegie gift)	12,000
Ft. Madison	Mrs. Henry Cattermole (memorial to her husband)	25,000
Grinnell	Hon. Joel Stewart	15,000
Independence	Perry Munson	15,000
Iowa Falls	E. S. Ellsworth (supplementing the Carnegie gift)	2,500
Keokuk	J. L. Rice, H. C. Hulskamp, Mrs. Spencer Grennell and other citizens	25,000
Muscatine	P. M. Musser	40,000
Nevada	Mrs. L. N. Silliman and other citizens	8,000
Onawa	Judge Addison Oliver	1,500
Osgoe	Orrin Sage	5,700
Washington	Jane A. Chilcote	12,000
Total .....	.....	\$ 241,200

It is a source of especial gratification that the citizens of our own State have shown in a most generous way their belief in this institution by erecting library buildings in their home towns. Mr. W. S. Burton, Minneapolis, Minn., left a bequest of a book fund of \$10,000 for Anamosa on condition that a building should be provided, and gifts for lots for buildings, book funds, furnishings, etc., have been contributed in a most generous way by many citizens.

There is not a community in the State of Iowa large enough to support a library by municipal tax but that is able to erect a library building, either by tax or by gifts of its own citizens, if it so desires. While Mr. Carnegie's gifts of library buildings are bestowed by him in a manner to avoid pauperizing a community, by requiring them to provide for the maintenance of the library, still it is a vastly more desirable thing for the towns in such a prosperous, progressive and intelligent commonwealth as Iowa to provide the home for the library. The public school buildings are erected at the expense of each community; why not the public library building for the other equally important educational institution?

ORGANIZATION AND RE-ORGANIZATION.

In the founding of new libraries it is of the utmost importance that systematic and business-like methods of conducting them shall be adopted. The integrity of a public institution rests upon its records, and the people have a right to demand that those in charge of an institution belonging to the people

and supported by public tax shall properly care for the property and be able to locate every item upon demand.

The accession book, containing a list of the books as property, which is the basis for insurance; the classification and shelf-list, which arrange the books according to the subjects of which they treat; the card catalogue which directs you to the exact book and its location; the loan system, which properly records the loan of the book, giving the time of loaning, person to whom loaned; these are all records which should, if made correctly in the beginning, put the library on a footing where it may go forward with confidence to meet the growing demands of the community.

It costs much more to reorganize an old library with a few thousand volumes than it would have cost to have properly organized the work in the beginning. It is extremely gratifying that many of the new libraries in the State are beginning right and that several of the older libraries, seeing the value of modern organization, have secured an organizer to assist the librarian in reorganizing the library.

The Library Commission regrets its financial inability to provide the expenses of an organizer to go to the smaller libraries and do this important work. The duties of the Secretary include many lines of work and the field is so constantly widening that it is impossible for her to give sufficient time to any one place and do the painstaking, careful work necessary in organizing a library, much as she would like to do so.

It is her duty to visit any library and plan with the librarian and trustees for the most expeditious and useful method of putting the library in good order, in selecting books and in making the institution most effective. She can then recommend some one with training and experience whom the trustees may employ for the details of organizing. For the present, this is all that can be done by the commission in the actual work of organizing, but it is hoped that the appropriation for the work of the commission may in the future be increased to provide for this much needed work.

PUBLICATIONS OF THE COMMISSION.

It has seemed important to provide the libraries of the State with printed matter of various kinds giving information and suggestion as to methods and improvements in library work; also to set forth the aims and purposes of the modern library movement for the information of communities without library facilities.

A circular of library information is issued by the Commission every three months entitled the "Quarterly of the Iowa Library Commission". This contains contributions from librarians and others of recognized ability on timely library topics and especial attention is given to the progress of library affairs in the State. An edition of 1,200 copies of each issue is printed and it is sent free to all the public libraries and trustees of free public libraries in the State.

At a conference of the officers of the Library Commissions of Iowa, Minnesota and Wisconsin in October, 1901, plans for co-operation in issuing printed matter of common interest and need to these states were discussed; the conditions in these states being similar and each Commission being overburdened with work, it was believed that such co-operation would prove economical to all concerned. The Quarterly published by Iowa it was thought could be utilized by the other states, but after a few issues under this plan the difficulties to be overcome proved it to be impracticable.

The Hand Book of Library Organization which contains information as to the methods of organization, administration, selection of books, necessary supplies, etc., is of especial value to beginners in library work and is sent free to all librarians, trustees and others in the State who are interested and request it.

This Hand Book covers subjects of common interest to the states of Iowa, Minnesota and Wisconsin; hence, it was issued in co-operation, the Minnesota Commission editing it and bearing the first expense of publication. The Iowa edition contains the text of the free public library law of Iowa.

The Suggestive List of Books for a Small Library, containing about twelve hundred titles, is another valuable publication, which was of equal interest to these three states and was issued under the co-operative plan, being compiled by the Wisconsin Commission; this list was dated January, 1902, since which time

a supplement has been issued covering the books issued from that date to June, 1903. This also is for free distribution.

A Buying List of recent books recommended for purchase is issued every few months, being compiled by the Wisconsin Library Commission for the Library Commission League.

Leaflets are issued by the Iowa Library Commission from time to time as needs arise bearing on definite subjects. The following have been issued:

No. 1. Shall a free public library be established ?

(Contains suggestions as to how to start a library, text of the free public library law, the Library Commission law, and rules and regulations for a library.)

No. 2. Iowa Day and a few books about Iowa.

No. 3. Periodicals, their value and use.

No. 4. Birthdays, anniversaries and events.

No. 5. Free Traveling Library of Iowa.

No. 6. Books for the blind.

In connection with the work of the Traveling Library in supplying books on subjects for club study, the following lists have been printed:

Agriculture.

Brief list of art books.

Manual training, cookery and needlework in the public schools.

Domestic science.

Shakespeare.

In response to frequent requests, a brief list of books for young people was issued during the first year of the Commission's work entitled, "One Hundred Good Books for Girls and Boys."

A small pamphlet has been issued, setting forth the work which the Commission has undertaken, entitled "Iowa Library Commission: its Purpose, Methods and Activities."

"Library Buildings," by Mr. Grant C. Miller, of Chicago, was issued as a pamphlet, being a reprint of his paper read before the Iowa Library Association at the annual meeting in 1902 at Grinnell.

Announcements of the Summer Library School are issued annually and a "List of Suggested Reading for Library Work with Children" has been issued in connection with that course in the Summer School.

A LIST OF BOOKS RECOMMENDED FOR A CHILDREN'S LIBRARY.

The most important publication issued by the Commission during the present year is this list compiled by Miss Annie Carroll Moore, Children's Librarian, Pratt Institute Free Library, Brooklyn, N. Y. The list contains more than five hundred titles and is grouped under subjects. It is prefaced by practical "Suggestions for the selection and purchase of children's books," which will be found most helpful. It is certainly important that librarians and book committees should have all the reliable helps possible in the important task of selecting children's books and the Commission believes that this list is a practical contribution to this subject and takes pleasure in presenting it to the library workers of the State. Miss Moore's efficient service in connection with the Iowa Summer School for Library Training gives this list definite value to Iowa librarians, while her recognized position in the American Library Association as an authority on the subject of children's books and work with children gives the list recognition as a valued contribution to this subject.

CHECK LIST OF STATE PUBLICATIONS.

It has been the desire of the Library Commission to compile a list of the publications of the State of Iowa and print it in a simple, tabulated form, so that it would serve the librarian as a check list for the State publications in the library, and also furnish the much needed information as to what has been published by the State and what constitutes complete sets of the publications of the various departments of the State. The finances of the Commission do not permit of the employment of additional help to do this important work, but it is hoped that by co-operation of the librarians of the State or by some other means this work may be accomplished.

LIBRARIANSHIP.

A collection of books purchased and placed on the shelves does not alone constitute a library in the modern sense of that word. It is now generally conceded that the free library is a part of the great American educational system, hence those who have charge of it should be educators, and the best and widest use of the books in the library is the test of its efficiency. More and more it has come to pass that as is the librarian, so, largely, is the library. The district library system which was inaugurated in about twenty states many years ago was a comparative failure because of lack of proper administration. The taxpayers' money will do its best work in those libraries where there is intelligent administration by those who have been trained for their work. The work of the librarian is coming to be regarded as a distinct profession, and the training for this field of educational work is considered as necessary as the preliminary training for the public school teacher. The ideal librarian, however, should not only be equipped in technical details, but filled with the broader knowledge of men and books which leads to that personal enrichment called culture.

There are in this country four library schools that train young men and women of ability and education for library work, three of them giving a two years' course and one a one year's course. Beside these, the necessary conditions of library work in smaller libraries have led to the establishment of summer library schools and training classes for those who are unable to attend the regular library schools. In these schools only simple methods and elementary work are possible, the aim being to give the students a conception of library work as a whole, and an acquaintance with modern methods within a short period of six or eight weeks. Such library schools are conducted by the State Library Commissions of Iowa, Wisconsin and Minnesota, in connection with the state universities. Admission requirements are practical experience, a definite library position and a High School education or its equivalent. In some of the larger libraries apprentice classes are conducted in order to teach the young assistants the most simple methods of the daily routine. More and more library trustees are coming to realize that to expend public funds in the employment of an inefficient librarian is not just to either the taxpayer or the library.

The following is a list of the library schools giving full courses : New York State Library School, Albany, N. Y.; Pratt Institute Library School, Brooklyn, N. Y.; Illinois State Library School, Champaign, Ill; Drexel Institute Library School, Philadelphia, Pa. Announcements may be obtained of the Library Commission, or directly from the director of each of the schools.

*ELEMENTS OF SUCCESSFUL LIBRARIANSHIP.

There are four factors in the making of a good modern librarian: natural qualifications, general education, professional training and experience.

1. *Natural Qualifications.* The arduous work of the modern librarian demands not only more than ordinary capacity and executive ability, but also health, strength, enthusiasm and tireless industry.

2. *General Education.* This should include the following:

a. Completion of a full high school course. Librarianship, even more than law or medicine, demands general preliminary education, and it is folly for anyone to think of entering even its subordinate positions before completing a full high school course.

b. Completion of a four years' course in one of the best colleges. A second, third, or even fourth rate college is better than none, but no more time and little more money are necessary in one of the few well-equipped colleges, than in one of the hundreds really little better than high schools. It is doubly important to select the best, as the object of the course is the broadening effect of college residence as much as the opportunity for study under good instruction.

College-bred candidates are strongly preferred because:

(1) They are a picked class selected from the best material throughout the country.

(2) College training has given them a wider culture and broader view with a considerable fund of information, all of which is valuable working material in a library as almost nowhere else.

(3) A four years' course successfully completed is the strongest voucher for persistent purpose and mental and physical capacity for protracted intellectual work.

(4) Experience proves that college discipline enables the mind to work with a quick precision and steady application rarely otherwise gained.

3. *Professional Training.* The two years' library school course of lectures, reading, problems, seminars, object teaching and visits, with actual experience in doing various kinds of work necessary in every considerable library gives a practical appreciation of the real nature of the work not otherwise to be obtained by any amount of study, reading, lectures or observation.

As with the college course, an inferior substitute is better than nothing, and those who cannot take the regular course in the school should attend the summer school and carry on correspondence work under direction. It is doubly important that those in the correspondence class, or studying privately, should attend a summer school where they can meet the teacher

* Extract from the Handbook of the New York State Library School.

personally, discuss topics with other students and have for a few weeks the advantages of a school's peculiar experience in teaching these new subjects and of its collection of illustrative material essential to the most intelligent work.

4. *Experience.* The faithful student who has thus spent two years in technical training in addition to a broad general course should then be ready to begin a successful career. With such a start he will add almost daily some new experience to increase his value. While having very great advantages over those without a technical education, the graduates of the library school are no more prepared to take their places at once on a par with librarians of long experience, than the recent graduate of a medical or law school is prepared at once to undertake the great cases or difficulties of his chosen profession. As a rule, the young librarian may wisely follow the example of the young lawyer and secure the position of assistant to an older member of a recognized standing in his profession. But these two years given to study should enable a promising candidate, after having taken this subordinate position, to grow to something higher with a rapidity and certainty not to be expected from one who has not had these unusual opportunities for laying a deep and broad foundation and for acquiring the inspiration and impetus essential to the most successful start in one's chosen life work.

IOWA SUMMER SCHOOL FOR LIBRARY TRAINING.

In planning for library advancement in Iowa and the encouragement of higher standards of library service, it was evident to the Library Commission that some effort should be made to help librarians and library assistants to obtain a better knowledge of library methods and detail, than they were likely to secure by working alone and without direction and instruction.

While those desiring to engage in library work were encouraged to attend a regular library school where systematic training is given for one or two years, it was evident that many already in the work in the State found it impossible to attend these schools on account of the time and expense involved. For this reason the Iowa Library Commission decided to give a six weeks' summer course in Library Training, the Regents of the State University having, through President MacLean, a member of the Library Commission, expressed their willingness to co-operate with the Commission in providing this course.

The Secretary of the Commission, having had experience in connection with library instruction in Ohio while head of the

Catalogue department of the Cleveland (O.) Public Library, and having been trained at the Library School at Armour Institute (now at the University of Illinois), was made the Director of the School.

The first session was held June 17 to July 27, 1901, as a regular department of the Summer Session of the State University of Iowa at Iowa City; the second session was held June 16 to July 26, 1902, and the third session, June 22 to August 1, 1903.

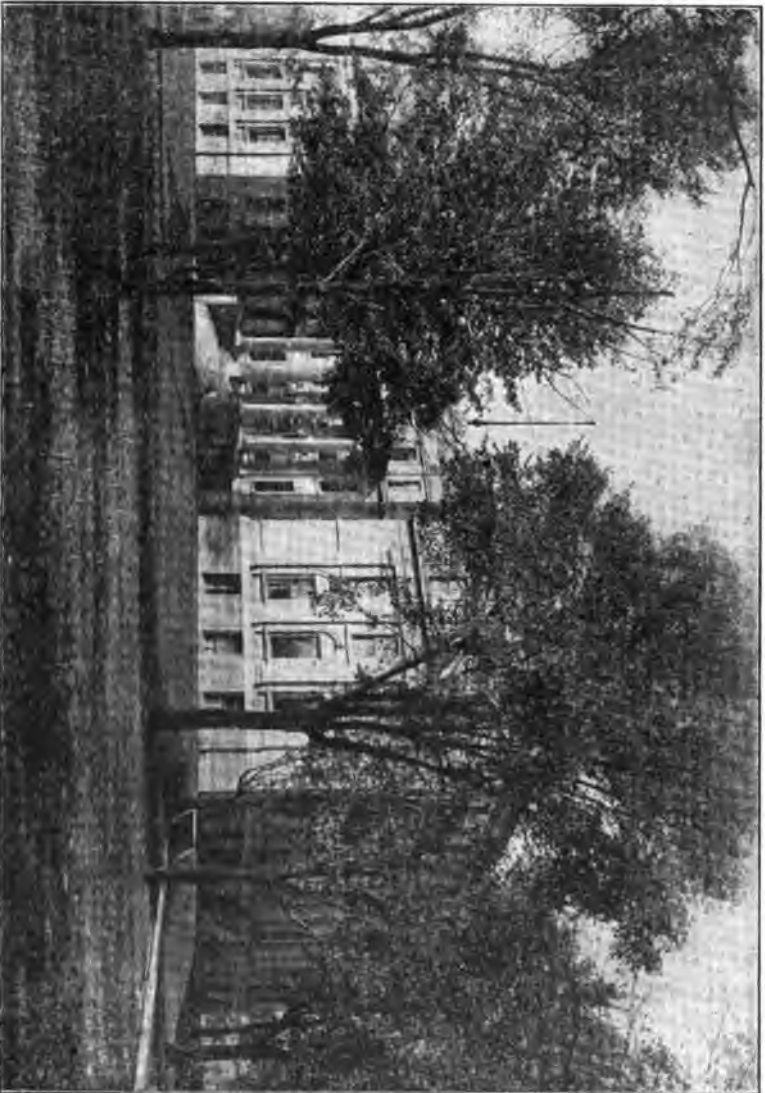
This school is intended for the librarians of the smaller libraries, for assistants in the larger libraries, and for those definitely appointed to library positions, in the State, who wish to prepare for their work. It is in no sense offered as a substitute for the full course of one of the regular library schools, but is given for those who feel their lack of knowledge of modern library methods and have not the time or means to attend a regular library school. By securing a leave of absence for six weeks they may gain a broader view of the work as a whole in this brief, systematic course. The aim is to give as thorough a course of technical library training as can be compressed into six weeks of close work, with the needs of the Iowa libraries especially in view.

SUBJECTS.

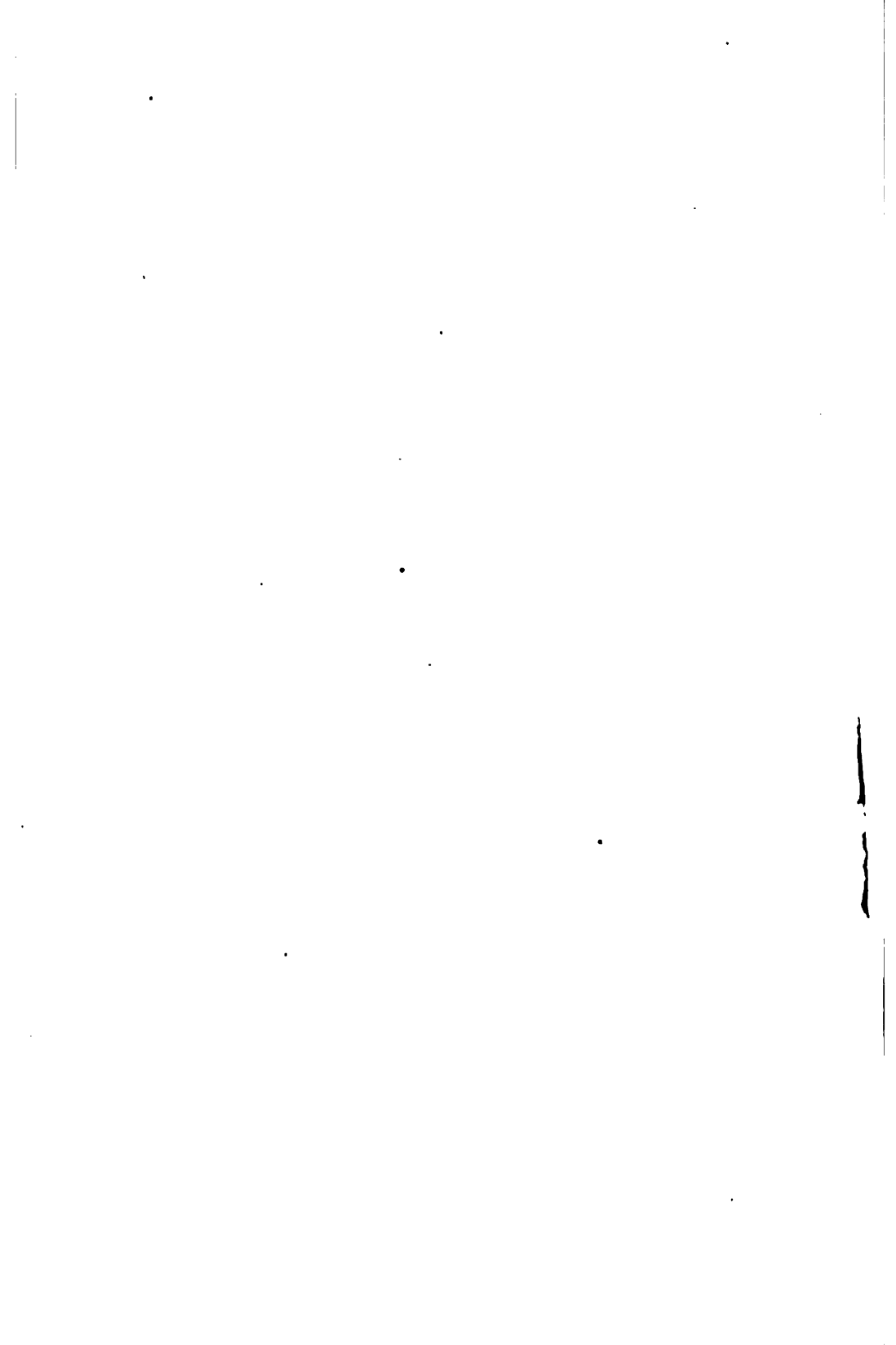
In all cases where the subject admits, instruction is accompanied by practice work which is carefully revised and criticised.

The following subjects are included in the lectures given during the course:

- Note-taking,
- Library handwriting,
- Statistics,
- Trade bibliography,
- Mechanical preparation of books,
- Accessioning,
- Shelf listing,
- Classification,
- Author numbers,
- Cataloging,
- Printed finding lists,
- Serials,
- Loan systems,
- Library work with children,



HALL OF LIBERAL ARTS—S. U. I.—WHERE IOWA LIBRARY SCHOOL IS HELD.



Reference work,
Reading lists,
Interior arrangement of a library,
Libraries and schools,
Library extension,
Library commissions and traveling libraries,
Library administration,
Binding and repair of books,
Library ideals,
Library architecture.

INSTRUCTORS.

The instruction in classification and cataloging has been given by Miss Esther Crawford, of the Western Reserve University Library, Cleveland, O., who is so well and favorably known to Iowa librarians, being a native of this State. Miss Crawford is recognized as an authority in her subjects and her instruction is given from the fulness of wide experience and close study.

Library work with children was given by Miss Annie Carroll Moore, Head of the Children's Department, Pratt Institute Library, Brooklyn, N. Y. Miss Moore has been intimately identified with the movement in recent years to give this work the prominence it deserves, and now has, in the libraries of the United States. Her course in the summer session has proved a most popular and helpful feature of the school.

Miss Harriet A. Wood, Head Cataloger in the University Library at Iowa City, has given the instruction in reference work and brings to this subject the requisite training and experience in reference work which makes this course practical and helpful.

Miss Wood also gave instruction in accession work, shelf listing, and minor subjects.

A trained assistant revises all technical work daily.

LECTURERS.

Lectures are given during the course by members of the Faculty of the State University and members of the Library Commission. Dr. George E. MacLean, President of the State University, Johnson Brigham, State Librarian, and Mrs. H. C.

Towner, all members of the Library Commission, lecture on some of the larger phases of library work. During the first session Mr. J. I. Wyer, Jr., Librarian University of Nebraska, gave the lectures in trade bibliography. Miss Virginia E. Graeff, supervisor of kindergartens, Cleveland, O., gave three most suggestive and inspiring lectures to the students on the " Art of Story Telling " and " The Child and the Book " during the second session.

Miss Tobitt, Librarian of the Omaha (Neb.) Public Library, has lectured on trade bibliography and book binding. The Omaha library has its own bindery, hence the actual experience which Miss Tobitt brings to the subject of binding makes these lectures of great practical value.

The Library of the University, comprising about 60,000 volumes, and the Public Library of Iowa City, comprising about 4,000 volumes, are at the service of the student, and the Library Commission has been able to provide books for practice work from the Traveling Library collection and the generous loans from libraries of the State.

COURSES.

Subjects of technical interest to library workers, affecting the orderly arrangement and conduct of the library have been given due prominence. The essential records,—accession and shelf,—are explained with practice work sufficient to make them clear. Simple and practical loan systems are also discussed.

The course in cataloguing and classification has dealt with the fundamentals of each subject, and on the supposition that the student has had little, if any previous instruction.

Classification instruction is based upon the Decimal System (Abridged edition) and the Cutter author numbers are used. The course in cataloguing extends through two sessions, instead of one, thus reducing the " cramming " process and its consequent evils. The first year's course covers the elementary principles of author and title entry and extends through the first four and one-half weeks of the session leaving the last two weeks for the special course in children's work. The second year's course extends through the entire six weeks, covering the principles of subject and analytical cataloguing. The second year's course is open to only a limited number of students, admission being based on the quality of the first year's work previously done in

this school and subsequent experience, or upon satisfactory evidence furnished as to previous training elsewhere and actual library record work.

REFERENCE WORK.

Reference work has received the attention which its importance warrants; and helpful methods for aiding students in their researches, the best books on selected subjects, etc., are discussed.

The course consists of twelve lectures, and problems likely to arise in actual work are assigned. The instruction is based upon *Miss Kroeger's Guide to the Study of Reference Books*.

LIBRARY WORK WITH CHILDREN.

During the last two weeks of the session instruction is given on this subject and students are admitted for it alone. No feature of library work is of such vital importance as the work with children. For this reason this has been an especial feature of the school. Teachers and mothers find it practical, helpful and inspiring. Library trustees get from it much that helps them in dealing with the perplexing question of children's books.

This course includes three series of lectures.

Series I. Special Lectures upon the Principal Classes of Children's Books:

- Mythology and fairy tales,
- History and historical stories,
- Picture books and easy books for little children,
- Fiction for boys and girls.

(Book lists are provided to accompany these lectures. Students are also given problems in connection with each class of books.)

Series II. Special Lectures upon Important Features of the Work of a Children's Department:

- Personal relations between the children's librarian and the children, the teachers, and the parents,
- The necessary records and statistics of a children's department,
- How to make a picture bulletin and when to make one.

Series III. General Lectures:

The history of children's libraries,
 The selection of books for a children's library,
 The decoration and furnishing of a children's room or corner,
 Co-operation between the public library and the public school,
 Library leagues, story telling, and other special features in
 library work for children.

(A list of suggested reading accompanies these lectures.)

ENTRANCE REQUIREMENTS.

Inasmuch as the course is intended especially for Iowa librarians who are in charge of small libraries, those who have had some experience in library work or wish to prepare for definite positions are given preference. Emphasis is laid on practice work and prompt technical revision and correction, hence the number admitted to the class must be limited.

Students are received from other states if they meet the admission requirements and if the limit of students is not reached by Iowa applicants. Entrance examinations are not required, but candidates are supposed to have completed a high school course or its equivalent.

As the course in Library Work for Children deals with a subject of such general interest, students are admitted for this course whether engaged in library work or not, and those from other states are welcomed.

BOOKS.

The following books are used in the Summer School. Those marked with an asterisk are published by the U. S. Bureau of Education, Washington, D. C., and are sent to any address without charge. Others are on sale at the school.

Dewey. Simplified library school rules	\$ 1.25
——— Decimal classification.....	5.00
——— Abridged edition (may be used if student owns it).....	1.50
*——— Papers prepared for World's Library Con- gress, 1903	Free
*Cutter. Rules for a dictionary catalogue....	Free
——— Decimal author table (two-figures)....	1.25
American Library Association. List of subject head- ings.....	2.00

*Catalogue of A. L. A. Library	Free
Kroeger. Guide to the study of reference books....	1.25
Crawford. Cataloguing.....	.15
Supplies for practice work are obtained at the school.	

EXPENSES.

The tuition fee in the Library School is \$10.00 for the regular first year's course, including the course in Library Work with Children. For this latter course alone the fee is \$5.00.

To those returning for the second year's course in cataloguing the tuition will be \$5.00, and these students are advised to take one additional course in the University Summer Session.

The additional cost of library material necessary for practice work and the necessary text-books, will not exceed \$10.00.

STUDENTS OF THE SUMMER LIBRARY SCHOOL, 1901.

Name.	Place.	Library.
Anders, Mrs. Florence G.....	Iowa Falls.....	Public.
Ashby, Evelyn J.....	Cedar Rapids.....	Public.
Bibbs, Alice W.....	Boone.....	Public.
Bryant, Mrs. C. H.....	Corning.....	Public.
Clapp, Lucretia D.....	Burlington.....	Public.
Doren, Elizabeth B.....	Dayton, Ohio.....	Public.
Estabrook, Clara E.....	Eldora.....	Public.
Gay, Margaret.....	Chariton.....	Public.
Gordon, Pearl A.....	Hamilton, Ill.....	
Hulbert, Grace.....	York, Neb.....	Public.
Lloyd, Adelaide C.....	Iowa City.....	Public.
Lutz, Daisy I.....	Cedar Rapids.....	Public.
McLoney, Ella M.....	Des Moines.....	Public.
Mahin, Mrs. Emma L.....	Muscatine.....	P. M. Musser.
Parker, Olivette B.....	Burlington.....	Public.
Pittman, Cora H. K.....	Keokuk.....	Teacher.
Schmidt, Emma J.....	Burlington.....	Public.
Stevens, Olive E.....	Ames.....	Iowa State College.
Switzer, Grace E.....	Iowa City.....	Public.
Tipple, Fannie F.....	Glenwood.....	Public.
Ulrich, Mrs. Linna.....	Centerville.....	Public.
Wayne, Mabel A.....	Decatur, Ill.....	Public.

STUDENTS OF THE SUMMER LIBRARY SCHOOL, 1902.

Adams, Mrs. Minnie B.....	Vinton.....	Public.
* Anders, Mrs. Florence G.....	Iowa Falls.....	Public.
Baker, Mary E.....	Marshall, Mo.....	Missouri Valley College.
* Bruen, Mary.....	Burlington.....	Teacher.
Buetner, Mrs. E.....	Burlington.....	Public.
Campbell, Gertrude L.....	Fort Dodge.....	Public.
* Carey, Miriam E.....	Burlington.....	Public.
* Clapp, Lucretia D.....	Burlington.....	Public.
* Cooton, Mrs. Gertrude J.....	Chicago, Ill.....	
* Daniels, Adeliza.....	Marion.....	Trustee.
* Eason, Fannie M.....	Marshalltown.....	Public.
Forward, Mary O.....	Rockton, Ill.....	Public.
Fulton, Nannie P.....	Keokuk.....	Public.
Galloway, Reta Blanche.....	Marshalltown.....	Public.

* Entered for special course only in Library work with children.

STUDENTS OF THE SUMMER LIBRARY SCHOOL, 1902—CONTINUED.

Name.	Place.	Library.
* Gatch, Ruth G	Des Moines	Public.
Gunsolus, Helen E.	Lake Forest, Ill.	Ferry Hall.
Jones, Frances	Hebron, Ill.	Public.
Kapp, W. E.	Cherokee.	Teacher.
McRaith, Helen M.	Iowa City	Public.
Moffitt, Bessie I.	Boone	Public.
Mullany, Grace C.	Dubuque	Carnegie-Stout.
* Namur, Cecelia B.	Iowa City	
Noble, Edna C.	Lincoln, Neb.	Public.
Oliver, Joanna B.	Onawa	Public.
Paarmann, J. H.	Davenport	Academy of Science.
Parkhurst, Mary L.	Marion	Public.
* Perry, Mrs. Jessie B.	Chicago, Ill.	Public.
* Pickrell, Priscilla	Des Moines	State Library.
* Robbins, Ethel A.	Cedar Rapids	Public.
Sawyer, Mrs. Nellie S.	Muscatine	P. M. Musser.
Smith, Edith J.	Chicago, Ill.	School of Education.
Smith, Jennie P.	Hawarden	Public.
Stagg, Lila E.	Grinnell	Iowa College.
Stocker, Ellen G.	Muscatine	P. M. Musser.
Strange, Joanna G.	Iowa City	State University.
Swiney, Elizabeth V.	Davenport	
* Waterbury, Flora A.	Iowa City	State University.
* Wheelock, Mary E.	Grinnell	Public.
* Yates, Mrs. Anna S.	Tipton	Public.

* Entered for special course only in Library work with children.

STUDENTS OF THE SUMMER LIBRARY SCHOOL, 1903.

† Amidon, Mary I.	Cedar Rapids	Public.
Beach, Paula H.	Davenport	Public.
Chapin, Mrs. Anna H.	Mason City	Public.
Chidester, Eva Maud.	Evanston, Ill.	Public.
* Cook, Estella	Chariton	Public.
Evans, Pearl	Atlantic	Public.
† Fulton, Nannie P.	Keokuk	Public.
Gear, Fannie A.	Columbus, Neb.	Public.
† Gunsolus, Helen E.	Lake Forest, Ill.	Ferry Hall.
Hopkins, Adah M.	Grinnell	Iowa College.
Horton, Mrs. Elizabeth M.	Algona	Public.
Howard, Clara L.	Lincoln, Neb.	Public.
† Hulbert, Grace	York, Neb.	Public.
Johnson, Eliza L.	Iowa City	State University.
* Lloyd, Adelaide C.	Iowa City	Public.
Logasa, Hannah	Omaha, Neb.	Public.
* McCoy, Cina	Muscatine	Teacher.
McGee, Alice F.	Iowa City	Historical Society.
† McRaith, Helen M.	Iowa City	Public.
† Moffatt, Bessie I.	Boone	Public.
Oliver, M. Maud.	Onawa	Public.
Perkins, Mrs. Carrie P.	LaGrange, Ill.	
Ragnet, Marguerite	Davenport	
* Roberts, Jennie E.	Iowa City	Teacher.
† Sawyer, Mrs. Nellie S.	Muscatine	P. M. Musser.
Simpson, Ida M.	Maquoketa	Public.
† Stocker, Ellen G.	Muscatine	P. M. Musser.
Townsend, Eliza E.	Keokuk	Public.
Tullosa, Carolyn M.	Iowa City	State University.
Waterbury, Flora A.	Iowa City	State University.
† Wilson, Bertha B.	Des Moines.	Public.

† Second year course.

* Special course only in Library work with children.



LECTURE ROOM-IOWA SUMMER LIBRARY SCHOOL.



PERIODICAL CLEARING HOUSE.

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USE AND VALUE OF PERIODICALS.

Periodical literature supplements the meager resources of a small library in many ways. To those libraries unable to afford expensive reference books the opportunity is presented of giving valuable aid to the student by means of magazine articles. These articles, being in a condensed and convenient form, are often more desirable than an entire book on the subject under consideration.

It becomes a matter of moment to every Iowa librarian to secure as quickly as possible sets of the more important magazines by co-operating with the Library Commission, in the "clearing house" for the collection and distribution of periodicals. By such co-operation, libraries may with little or no expense acquire valuable material for reference work.

Volumes of the *Forum*, *North American Review*, *Review of Reviews*, etc., are a treasure house of information and suggestion for members of debating societies or clubs struggling with perplexing social and political questions.

Harper's, *Century*, *Scribner's* and other leading magazines are of constant help to study clubs and classes, and of perennial interest to the general reader; while the *St. Nicholas*, *Harper's*, *Round Table*, and *Youth's Companion* are of the greatest use to the pupils of the graded schools for supplementary study, meanwhile affording entertaining reading for the young people.

CLEARING HOUSE PLAN.

The Iowa Library Commission serves as a medium for the exchange of periodicals, either single numbers or complete volumes.

It will receive magazines which libraries have as duplicates or may collect in their localities but do not need, and will from this collection supply libraries with volumes or parts of volumes needed to complete sets. This is done without cost to the libraries except for transportation on those they obtain from the Commission.

Exchanges are made by freight unless otherwise directed, except for single numbers, the Commission paying expense of transportation for all magazines received, and libraries paying expense of transportation for all magazines sent them.

COLLECTING.

In the attics and store rooms of the homes of Iowa are numbers and volumes of magazines which are little more than rubbish in their present condition, but would be of untold value to small struggling libraries.

A systematic collection of these periodicals should be made in every town. Librarians can reach the people of their several communities through the local newspapers, the woman's clubs, or the young people of the high school, stating their desire to receive contributions of magazines at the library, and when necessary their willingness to send to the houses for them. Enthusiastic boy friends of the library may be glad to help collect them.

The librarian will use such of these as are needed in completing the sets of periodicals in the local library. This of itself would be worth the trouble of collecting, but in addition to this is the pleasure of helping other libraries.

It is the desire of the Commission to collect only those magazines which are indexed in Poole's Abridged Index and the Reader's Guide, with the addition of certain periodicals included in the supplementary list.

Do *not* send a list of magazines to see if we want them. Examine the list of magazines given below under Poole's Abridged Index and Reader's Guide, and if your magazines are included in either of these lists you may be sure they will be acceptable and can forward to us. Do *not* send others, without our direction.

Pack the periodicals in a box and send by freight to the Library Commission, Capitol Building, Des Moines. The freight need not be prepaid. Write the Secretary when they are shipped. Be sure to put on outside of box "From——Library, —— Iowa," so that it may be known from whom they come.

DISTRIBUTING.

To aid the libraries of the State in building up reference collections of magazines is the chief object of the Commission in establishing this clearing house for periodicals. In return the libraries so helped, or in anticipation of such help, are expected to send duplicates to the clearing house to be sent to other libraries.

In excess of calls from other libraries, the Commission will place the periodicals in the hands of earnest people who can

use them to advantage, either in connection with the traveling libraries, or in other ways.

Send a list of needed periodicals, designating with accuracy the magazines wanted. Arrange list of wants alphabetically by the name of magazines desired. If single numbers are wanted give name of magazine, month and year, volume and number. For example,—Harper's Feb. 1899, v. 98, No. 3.

If complete volumes are wanted give name of magazine, volume and inclusive months contained in volume. For example,—Harper's, v. 98, Dec. '98—May '99. Do *not* use Roman numerals in designating volumes and numbers.

In distributing magazines shipments will be made by freight unless otherwise directed, at the expense of the library to which they are sent.

INDEXES TO PERIODICALS.

Periodical literature is practically worthless to a library without indexes.

They open up a mine of information and enable a small library to make the most of its resources. Indexes also make available much splendid material which is afterward published in book form. This material a library will not need to duplicate if it has the magazines, as for example, Nicolay and Hay's *Life of Lincoln*, Sloan's *Life of Napoleon*, and many other serial works.

POOLE'S INDEX, ABRIDGED EDITION.

Poole's Index to Periodical Literature has long been the standard, and practically the only key to the subjects treated in the periodicals and reviews. The large set of Poole, comprising five volumes, is too expensive for most libraries, and includes so many periodicals that are not available or desirable for the small library that its purchase is impracticable.

The Poole's Index, Abridged, is just what the smaller libraries need. It is a necessity, and its price brings it within the reach of every library. It indexes the contents of thirty-seven leading periodicals, from 1815 to the end of 1899, and these are such as all libraries should plan to complete sets of as the years pass.

The following is a list of periodicals indexed with the year of first issue:

American historical review.....	1895	Harper's magazine.....	1850
Arena.....	1889	Lippincott's magazine.....	1868
Atlantic monthly.....	1857	Littell's living age.....	1844
Book-buyer.....	1884	McClure's magazine.....	1893
Bookman.....	1895	Magazine of art (Cassell's).....	1878
Bostonian (now National maga- zine).....		Nation.....	1865
Century (formerly Scribner's monthly).....	1881	National magazine..	1894
Chautauquan.....	1880	National review.....	1883
Contemporary review.....	1866	New England magazine.....	1886
Cosmopolitan.....	1866	Nineteenth century.....	1877
Critic.....	1881	North American review.....	1815
Eclectic magazine.....	1844	Outing.....	1887
Education.....	1880	Outlook.....	1893
Educational review.....	1891	Political science quarterly..	1886
Engineering magazine.....	1891	Popular science monthly.....	1872
Fortnightly review.....	1865	Quarterly journal of economics.	1886
Forum.....	1886	Review of reviews.....	1890
Geographical journal.....	1893	Scribner's magazine.....	1887
		Scribner's monthly (merged into the Century).....	1870-1881

READERS' GUIDE TO PERIODICAL LITERATURE.

This index to the standard *current* periodicals usually found in a public library will be of the greatest use. In fact, for quick reference to subjects of current interest this index is invaluable. It cumulates the entries each month throughout the year so that the December number constitutes the annual index to these periodicals for the entire year. It is published by H. W. Wilson, Minneapolis, Minn., to whom the subscription, \$6 per year, should be sent.

SUPPLEMENTARY LIST.

The following periodicals, though not included in the general indexes, have so much of value that the Commission will be glad to receive and distribute them. The St. Nicholas is especially desirable, now that it has its own valuable index. Midland monthly is of growing value to Iowa libraries having been an Iowa publication.

Harper's Bazar,	Ladies home journal,
Harper's Round table (discontinued),	Midland monthly (discontinued),
formerly Harper's young people,	Scientific American,
Harper's weekly,	————— Supplement,
	St. Nicholas.
	Youth's companion.

WHAT IS NEEDED BY EVERY LIBRARY.

For tracing any magazine article which has appeared in the leading periodicals from 1815 to date, the purchase of the following is recommended:

Poole's Index, Abridged edition. Cloth, \$12; one half morocco, \$16.

Which indexes to the close of 1879.

Readers' guide to periodical literature 1900-1903, cumulated, \$15.

Readers' guide to periodical literature, monthly, \$6 per year.

Indexes current periodicals

TRAVELING LIBRARY.

Traveling libraries have been legalized and an appropriation made for their support in nineteen states, in order that the helpful influence of good books shall reach the remotest parts of the State, where no local free public library exists supported by municipal tax.

The benefits of the traveling library system in Iowa are placed within the reach of every citizen, for the same reason that the public school system is made state wide in its operations, namely: That the blessings of education may become general, that the intellectual and moral side of our communities may be healthfully stimulated, and that the high standard of Iowa citizenship may be raised still higher.

In the development of the library movement, efforts should be made to establish a free public library in every city, town, village, county or school district large enough to maintain it by local tax, and it is the desire of the State in creating the traveling library system that it shall foster and develop this local library spirit, to the end that such libraries may be established. In the effort of any community to establish a local library, it is the duty and will be the pleasure of the Iowa Library Commission to aid to the full extent of its ability.

The traveling library plan is for the distribution of books from a center to persons or localities geographically remote. To send books to persons in isolated rural homes, at the country crossroads and to the villages and towns where groups of people desire good books, that inform and inspire, is the definite purpose.

In Iowa the General Assembly of 1896 passed a law providing an appropriation of \$2,000 annually for the establishment and maintenance of a traveling library system to be operated by the State library. In 1900 a law was enacted providing a Library Commission to actively extend library interests in the State, and in 1902 the general assembly combined these two interests, transferring the free traveling library to the Iowa Library Commission, and providing an increased annual appropriation for library extension in the State, both in the work of the traveling library and in the encouragement of the establishment of local, tax-supported libraries.



GROUP OF IOWA FREE TRAVELING LIBRARIES.



The traveling library is now distinct from the State Library, being supported by separate state appropriation. The State Library is a great reference library; in the nature of such a collection of books for reference purposes, it is impracticable to take books from the shelves of the State Library proper, when students who wish to consult certain books naturally expect to find them on the shelves. For this reason it was found desirable to have a separate collection of books for circulation throughout the State, and the State Library was unceasing in its efforts to inaugurate the Traveling Library of Iowa, which is now in charge of the Iowa Library Commission.

Since the revision of the Library Commission law by the Twenty-ninth General Assembly transferring the Traveling Library from the State Library Board to the Iowa Library Commission work has progressed as rapidly as possible on the work of revising the older libraries and preparing an author and subject catalogue on cards for office use. It was found, as the collection of books increased and their use developed, that many of the books in regular fifty-volume libraries were better suited to the needs of the study clubs, and would be of more service if transferred to the general loan collection for that purpose; it was also seen that by adding fresh literature to some of the earlier libraries their popularity would be greatly increased. Furthermore, many of the books in the earlier collections were in need of rebinding or could better be replaced by new books.

The need of revision, therefore, while evident, has been a slow process, being carried on gradually as the libraries came in from circulation over the State.

It is the intention of the Commission to soon issue a printed list of books in Libraries 1 to 100, as the revision is nearing completion. In addition to the revision, the charging system and the office and shipping records have also been carefully worked out by Miss Margaret W. Brown, who has had direct charge of the traveling library department, and to whom the Commission is greatly indebted for much originality in working out methods and unceasing energy and enthusiasm in developing the Iowa Traveling Library work to a point of gratifying efficiency.

The most desperate need exists for room in the Capitol in which to do the work and properly care for the books as they go in and out, and it is anticipated that relief will soon be given to the very crowded conditions. About five thousand volumes in the general loan collection, arranged by subject, should be so shelved

that they are speedily accessible, so that when requests come for books on a subject they may be promptly supplied. The same is true of the periodicals in the clearing house collection.

To quote from a recent report of the Library Commission in a sister State, "The proper selection of the books for such libraries, their preparation for their purpose, the making and printing of the catalogue, the selection of the communities in which they shall be sent, the instruction of the librarians at the local stations, the examination of the libraries after their trips, the mending and replacing of books, the collection of fees for injuries and loss of books and all the correspondence and supervision necessary to conduct a large system of traveling libraries in the most successful manner requires a larger force than the Commission can employ with the funds provided for the purpose."

At present, there are 175 centers in agreement with the Library Commission for the use of Traveling Library books. Of these centers, twenty-eight are free public libraries, having small collections of books which the Traveling Library augments; twenty-nine are library associations; fifty-eight are study clubs of various kinds (twenty-five of these borrowing fifty-volume libraries for the use of their communities and thirty-three securing books on special subjects of club study); thirty-two are school districts in the country or small towns and twenty-eight are groups of taxpayers.

During the year, 227 libraries have been sent out, 115 being regular fifty-volume libraries and 112 general loan libraries varying in size from the single book to fifty volumes. These report 6,693 readers and a circulation of 19,032 and reports were not received on forty-six libraries. There are now 100 regular, fifty-volume libraries in the numbered series and some of the newer ones have been duplicated, making available 11,600 volumes in the entire collection.

KINDS OF LIBRARIES.

Two distinct collections of books are kept for traveling library purposes, viz:

Regular Libraries. These consist of fifty volumes, arranged in fixed group, designated by number, with lists of books included in each group. These libraries are lent as a whole, selections of particular books from these groups being impracticable.

Lists of the libraries are sent, and in selecting borrowers indicate the number of the collection wanted, giving several numbers in order of preference.

General Loan. This is a collection of books on subjects of interest from which selection is made when requests are received for material bearing on a special subject or for a special class of readers. This general loan collection includes (a) books for study clubs and other organizations, (b) libraries for young people, (c) specific books for individuals, (d) books for the blind.

(a) **Books for Study Clubs.** As far as the fund will permit, study clubs, whether belonging to the State federation or not, and similar organizations for study and improvement, may borrow books on subjects to be studied. The Year Book or outline of study should be sent and a selection of books best adapted to its requirements will be made. A list of books desired by applicants, if approved by the Commission as being of general interest, may be made the basis of purchase; otherwise, the best material already in the general loan collection will be sent. The number of books sent will depend upon the amount of available material, the demand for such material by other clubs, and the number of members in the club making application. The number of books sent at any one time to any club will usually not exceed ten volumes.

Clubs are urged to take an active interest in the local library and contribute to it books on subjects of club study and general reference books. By this means the club not only helps itself but helps others by making these books accessible to the general public at the library.

In several states the women's clubs contribute small traveling libraries on special subjects of club study. These are circulated to other clubs by the Library Commission of the state, the books being put up in neat cases, each book having a book plate with the name of the club which donated it. Thus these books carry their message of unselfishness and service for others to other clubs. The Iowa Library Commission will gladly be the medium through which such collections may be circulated in Iowa.

(b) **Libraries for Young People.** The demand for books for young people is more especially in the rural schools, as supplementary to their own libraries, which are made possible

under the school district library law. Inasmuch as the "List of Library Books for School Districts of Iowa," issued by the Department of Public Instruction in 1900 affords a good, printed list of books for young people, the Library Commission has made use of this for traveling library purposes, so that the selection of the books desired may be made from this list.

In the regular libraries of fifty volumes sent for general use there is a fair proportion of young people's books.

(c) **Individual Loans.** If books for study and investigation can not be obtained through the local public library or through a local organization already in agreement with the traveling library, individuals may secure them by making a deposit covering the retail price of the books if the importance of the subject and the frequency of demands justify their purchase.

(d) **Books for the Blind.** It is the judgment of those who have given the subject much thought that "circulation of books for the blind is most easily and appropriately made from a state center, because the books are expensive; most blind readers are unable or unwilling to visit a library; and there are few blind people in any one community, except in the large cities."

The Iowa Library Commission has added this feature to the work of the traveling library with the desire of reaching every blind person in the State, either those who have already acquired the ability to read type for the blind, or those who are studying it.

The co-operation of the superintendent of the Iowa College for the Blind has made it possible for the Commission to make a beginning in this work.

The plan is to loan books to any blind person in the State who desires them, upon the recommendation of a resident taxpayer acquainted with the applicant; or to send the books to any local library in agreement with the Traveling Library Department, Iowa Library Commission, where they may be easily obtained by the applicant and the books may be returned through the library in the same manner. The Commission will pay transportation on books for the blind; hence, there is *absolutely no cost* to the applicant. The form of application to be filed with the Commission or local library is as follows:

AGREEMENT FOR BOOKS FOR THE BLIND.

....., Iowa, ... , 190..

The applicant, ..., who desires the loan of books for the blind from the Traveling Library of the Iowa Library Commission, is a resident of....., Iowa, and is known to me to be reliable and trustworthy. Any books loaned to him (or her) will be duly cared for by the borrower, and their return is guaranteed by me.

(Signed)

Only one book at a time will be loaned to any one person; and selection should be made by naming author and title of the book desired.

The plan is largely dependent for its success upon the assistance of those who know persons who are blind and will send us their names. We depend on librarians throughout the State to interest themselves in this matter to the extent of visiting the blind who are known to them and informing them of the plans of the Library Commission to furnish them with books free of cost, and explaining the ease with which they may avail themselves of this opportunity. Librarians are asked to give publicity to this matter through the local papers. The reserve and timidity of this class of readers makes it necessary that the librarian shall make extra effort to see that the method of securing books is explained.

The assumption that blind readers desire something different from most people and that they wish to spend most of their time on distinctly religious literature is a mistake. They desire books that will give them a broader view of life, and an attempt to gratify this desire will be made.

Our aim is to extend this work until it reaches every blind person in the State who desires the books, but it will not be possible to reach those living in the smaller towns, or in the country, without the earnest co-operation on the part of many people. All who read this are requested to send us the names and addresses of every blind person known to them living in the State of Iowa, even if they are doubtful as to the probability of their making use of the books.

Inasmuch as the New York Point system is the one generally understood in Iowa, and is taught in the Iowa College for the Blind at Vinton, the Library Commission considers it advisable to circulate books in this type.

Following is a list of books from which selection may be made. The list will be increased as rapidly as the demands for the books shall justify it.

Alphabet sheets for acquiring a knowledge of the New York Point system will be sent on request.

BOOKS IN NEW YORK POINT.

Brown, Helen D. Little Miss Phoebe Gay.
Burns, Robert. Selections from poems.
Hale, E. E. The man without a country.
Longfellow, H. W. Evangeline.
Macaulay, T. B. Lays of ancient Rome.
Macaulay, T. B. Samuel Johnson.
Maclaren, Ian. Beside the bonnie brier bush.
Milton, John. Il Penseroso.
Muir, John. An adventure with a dog and a glacier.
Schiller, Frederick von. Poems and ballads.
Scott, Sir Walter. Marmion.
Seton-Thompson Ernest. Wild animals I have known.
Swift, Dean. Voyage to Brobdingnag.
Tales of adventure told by adventurers. V. 1.
Tales of adventure told by adventurers. V. 2.
Tennyson, Alfred. The Princess.
Wait's Point primer.

IN RAISED LETTERS.

Hutton, R. H. Life of Sir Walter Scott.

TO WHOM LOANED.

The State law is as follows: "The Library Commission is authorized to operate the traveling libraries to be loaned within the State to libraries, schools, colleges, universities, library associations, farmers' institutes, granges, study clubs, charitable and penal institutions, and to individuals, free of cost, except for transportation." Address all inquiries, requests for agreements, etc., to the Iowa Library Commission, Des Moines, Iowa.

The usual ways of securing books from the Traveling Library are through: (1) the local public library; (2) a library association, created for the purpose, where no tax-supported library exists; (3) a group of ten taxpayers, where no local association exists; (4) clubs, schools and other organizations; (5) individuals.

Local Public Library. Where the collection of books in the local library is small, it can be augmented materially by the use of the regular traveling library of fifty volumes, which may be exchanged every three months. In addition to this, after the local library has entered into an agreement with the Library

Commission for the traveling library, additional books may be secured through it for the use of study clubs and individuals.

Library Associations. When a group of people in a community desire to secure the benefits of the traveling library, the best method is to organize a library association for this purpose, electing a president, secretary and librarian, who shall sign the necessary agreements for securing the traveling library. It is often advisable that the same person shall serve as both secretary and librarian. Such an association is often the beginning of a local, tax-supported library, and at the very outset an earnest effort should be made to maintain a properly administered reading room in connection with the books received from the traveling library, which should be open to the public two days at least each week.

Taxpayers. Where it does not seem possible or desirable to effect a library organization, the signatures of ten taxpayers may be secured to the agreement and a librarian selected. On receipt of the agreement duly signed, a library will be sent to this group of people. However, it is desirable that an association be formed wherever possible. If ten people in a community can be interested in the matter, an association should be easily formed.

Clubs, Schools and Other Organizations. When books are needed on a special topic or course of study in a town or city where a local library exists, such a library would naturally be the source to which the club, school or other organization should turn for the necessary material. In case the local library is unable to furnish the needed books, it can enter into an agreement with the Library Commission for the loan of these books for the organizations.

If, however, there is no local public library, the club, school or other organization can, by their officers, enter into an agreement directly with the Library Commission for the loan of books needed for study.

Individuals. It is preferred that wherever possible loans from the traveling library should be secured through the local library or through an organization already under agreement. However, if this is impossible, the books may be secured by depositing their retail price in a draft or certified check with the Secretary of the Library Commission, the same to be returned

on the return of the books. The payment of postage or express charges both ways is expected on these books, and precautions should be taken in packing to guard against injury in transportation.

FORM OF APPLICATIONS FOR TRAVELING LIBRARY.

Send to the Iowa Library] Commission, The Capitol, Des Moines, Iowa, for these blanks to be filled out and returned before securing the library.

AGREEMENT FOR LIBRARY, CLUB OR ORGANIZATION FOR TRAVELING LIBRARY.

.....Iowa, ...190..

We, the officers, in]behalf of
(Name of organization.)
hereby apply to the Iowa Library Commission for the loan of books from the Free Traveling Library.

We hereby agree to pay the expenses of transportation of these books from and to Des Moines, and to provide a suitable place for them; that the books shall be loaned without charge to any person in the community who observes the rules of the Commission; that we will be responsible for the safe return of the books in good condition, paying promptly on demand of the Library Commission all loss or damage to books or cases not occasioned by ordinary wear or use.

.....is designated as librarian, and is authorized to represent this organization, in all correspondence and dealings with the Library Commission. (Signature).....
President.
.....
Secretary.

TAXPAYERS' AGREEMENT FOR TRAVELING LIBRARY.

.....County, Iowa.....190..

We, the undersigned, resident taxpayers of.....Iowa, hereby apply to the Iowa Library Commission for the loan of books from the Free Traveling Library.

We hereby agree to pay the expenses of transportation of these books from and to Des Moines, and to provide a suitable place for them; that the books shall be loaned without charge to any person in the community who observes the rules of the Commission; that we will be responsible for the safe return of the books in good condition, paying promptly on demand of the Library Commission all loss or damage to books or cases not occasioned by ordinary wear or use.

.....is designated as librarian, and is authorized to represent us in all dealings with the Library Commission.

(Signatures of ten taxpayers.)

1.....	6.....
2.....	7.....
3.....	8.....
4.....	9.....
5.....	10.....

On the reverse side of both the above is printed the following:

To IOWA LIBRARY COMMISSION, DES MOINES, IOWA:

The libraries which we receive will be placed in.....

.....of.
(State whether residence, store, hall, etc.)

....., and will
(Name) (P. O. address)

be open to the public from....M., to....M., on.....
(State hours) (State days of week)

Is shelving provided?..... Remarks
(Size of community, characteristics

of the people, whether more adult or juvenile readers, etc.)

(Signed).....Secretary.

In either case the librarian's agreement is as follows:

LIBRARIAN'S AGREEMENT FOR THE FREE TRAVELING LIBRARY OF IOWA.

As librarian of the Traveling Libraries loaned to.....
.....by the Iowa Library Commission, I
(Name of Organization)

hereby agree to care for the books while under my control, to circulate them in accordance with the rules of the Library Commission, and to make any required reports respecting their use.

(Signature).....

Name of town.....Date.....190..

CONDITIONS FOR LENDING.

1. An agreement must be filed with the Iowa Library Commission, Des Moines, before the library can be shipped.

2. The library must be kept in a convenient place, open for the delivery and return of books, at such time as is determined

upon by the local library or organization, of which due public notice shall be given; provided, it shall be open at least three hours each week. The location of the library is important. It should be kept at a central accessible point, where people will have no hesitancy in going.

3. No fee shall be charged for the use of these books. Arrangements should be made in advance by subscriptions or pledges for the payment of the necessary cost of transportation, etc.

4. Transportation shall be paid on the libraries both in receiving and returning. The books are loaned free by the State on this condition.

5. The period for which the regular libraries are loaned is three months, but when an extension of time is desired, it will be given upon application.

6. Shelving should be provided for the books if possible, so that their care and safety may be assured.

INSTRUCTIONS TO LIBRARIAN.

The following instructions relate especially to the circulation of the regular fifty-volume libraries, but will apply with modifications, to general loans:

Charging Tray.—Each local center is supplied with a tin charging tray for the use of the librarian. This is sent with the first library and should be kept until the use of the library is discontinued, or if another library is desired within six months. This tray is packed with the books and contains inside the cover printed instructions to the librarian for the use of the charging system; also application cards, librarian's record of borrowers and report cards. If additional cards are needed at any time, send for them.

Borrowers' Applications.—See that application card is properly signed, and in case of minor, that guarantor's signature is obtained. Arrange these application cards in the charging tray alphabetically by surname. Do not return these application cards. They are useful only to the librarian.

Book Cards. Each book has a book card, with author and title written plainly at the top. Keep this, when not in use, in the pocket inside the front cover of the book. On this is kept the record of the loan of the book.

Record of Borrowers. A record of borrowers should be kept for each library on the folder furnished for this purpose. The name of each borrower is entered on this record folder the first time he draws a book from the library. From this record the number of borrowers using the library is obtained for the librarian's report card, which must be sent to the Commission when the library is returned.

Method of Charging. When a book is loaned, take the book card from the pocket in the book and write on it the date and name of borrower in columns indicated. This is the record showing when and to whom the book is loaned and should be carefully filed in charging tray, alphabetically by name of author, or first word on book card. The date loaned should also be written on dating slip in the book opposite book pocket, to indicate to borrower, as well as librarian, the time the book was loaned.

Return of Book. When the book is returned find book card in charging tray, write date of return on book card and place book card in the pocket in the book.

Renewal. To renew a book, enter its return and charge exactly as if drawn for the first time.

Overdue Books. Examine book cards in charging tray at least once a week for overdue books and promptly notify each person who is more than a week in arrears, collecting the fine on return of book. Do not lend a book to any one having a fine unpaid. All fines shall be retained by the local library association.

Reports. Upon receipt of the library, promptly mail the receipt card. Upon return of the library, carefully fill out Librarian's report card and mail when library is shipped.

Change of Librarian. Notice of change of librarian is important and should not be neglected. Report such change at once to the Library Commission.

Contagious Diseases. If books are in circulation in a household where there is a contagious disease, decline to receive such books until the nature of the disease is reported to the Library Commission and instructions have been received.

RULES FOR BORROWERS.

Borrowers. After signing the application card, any adult resident of the locality may draw books as long as he complies with the rules. Minors must obtain the signature of a responsible person.

Number of volumes. Each borrower may draw one volume at a time, except where a work is issued in more than one volume, when two may be issued.

Time Kept. Any book may be kept for two weeks from date of issue, and may be once renewed for same period.

Fines.—A fine of one cent a day shall be paid for each book kept over time, and any money thus received shall be used by the local library association for library expenses. No books shall be lent to any one to whom a book or unpaid fine is charged.

Injuries.—The pages of the books must not be marked, and all losses or injury beyond reasonable wear must be promptly adjusted to the satisfaction of the librarian, by the person to whom the book is charged. Such fees shall be returned with the library to the Iowa Library Commission. Books are not considered injured "beyond reasonable wear" when the binding or leaves are loose, worn or soiled by use; but books returned after having been wet, torn, marked with pen or pencil, with book pockets or dating slips marked or torn, or with leaves or illustrations missing, are considered injured "beyond reasonable wear," and the librarian must collect damages from borrower, or the local organization under agreement will be held responsible. Librarians are asked to withdraw from circulation books with loose leaves and either repair them or return to the Library Commission for re-binding.

GENERAL DIRECTIONS.

Unpacking. Store shipping boxes, covers and screws, and keep in a safe, dry place. If combination shipping case is sent, directions for unpacking will be found inside the door. A key is mailed when the library is shipped in one of these cases. Labels for return will be found in the box. Check the books with list sent. Mail receipt card promptly. If additional cards or other printed matter are needed at any time, send to the Iowa Library Commission for them.

Returning. Compare books to be returned with list sent, examining them as to lost leaves or defacements. Book cards should be in book pockets. Pack books carefully. The box should be labeled with name of shipper and place of shipment and sent prepaid by freight or express.

Transportation. In returning a library prepay freight charges and use coin mailing card for sending 25 cents per box to the Iowa Library Commission, Des Moines, for drayage in Des Moines from freight depot to Capitol. **DO NOT SEND STAMPS.** If the local agent will accept this drayage fee with the freight charges, it can be paid to him.

TRAVELING LIBRARY CENTERS.

The centers under agreement for use of traveling libraries, July 1, 1903, are as follows:.

ADAIR—ADAIR COUNTY.

Independent School District, - - - John E. Foster, Librarian.
General Loan Library, fifty volumes for school use.

ADEL—DALLAS COUNTY.

Woman's Review Club, - - - Mrs. J. W. Graham, Librarian.
Books on subjects of club study.

ALGONA—KOSSUTH COUNTY (Union Township).

Taxpayers, - - - Mrs. C. D. Ward, Librarian.
County neighborhood—regular fifty-volume library for general reading.

ANDERSONVILLE—JASPER COUNTY.

Union Chapel Library Association, - - - Julia Shehan, Librarian.
Mining town—General Loan, fifty volumes for young people.

ARNOLD'S PARK—DICKINSON COUNTY.

Library Association, - - - Mrs. Emma Hallett, Librarian.
Regular fifty-volume libraries for general reading.

ARTHUR—IDA COUNTY.

Literary Club, - - - Fred J. Whinery, Librarian.
Regular fifty-volume libraries for general reading.

AUDUBON—AUDUBON COUNTY.

Columbian Club, - - - Miss Elizabeth Davis, Librarian.
Books on subjects of club study (Domestic Science).

AVOCA—POTTAWATTAMIE COUNTY.

Saturday Club, - - - - - Mrs. L. G. Consigny, Librarian.
Regular fifty-volume libraries for general reading. Books for club study.

BEDFORD—TAYLOR COUNTY.

Nineteenth Century Club, - - - - - Mrs. Joseph Arthaud, Librarian.
Books on subjects of club study.

BEDFORD—TAYLOR COUNTY.

Independent School District, - - - - - Mr. Frank E. Howard, Librarian.
General loans of fifty volumes each for young people.

BENTON—RINGGOLD COUNTY.

Literary Club, - - - - - Mr. S. E. Emmert, Librarian.
Regular fifty-volume library for general reading.

BIDWELL—WAPELLO COUNTY.

Debating and Literary Society, - - - - - Miss Cora Dewey, Librarian.
Regular fifty-volume libraries for general reading.

BLOOMFIELD—DAVIS COUNTY.

Twentieth Century Club, - - - - - Miss Fannie Cook, Librarian.
Books on subjects of club study.

BROOKLYN—POWESHIEK COUNTY.

Columbian Club, - - - - - Miss Margaret Cummings, Librarian.
Books on subjects of club study (English Colonies, etc.).

BURLINGTON—DES MOINES COUNTY.

Public Library, - - - - - Miss Miriam E. Carey, Librarian.
Regular fifty-volume libraries for use in county.

BURT—KOSSUTH COUNTY.

Taxpayers, - - - - - Mrs. Hattie A. Ames, Librarian.
Country neighborhood—regular fifty-volume libraries for general reading.

BURT—KOSSUTH COUNTY.

Woman's Club, - - - - - Florence K. Smith, Librarian.
Books on subjects of club study.

CALLENDER—WEBSTER COUNTY.

Taxpayers, - - - - - Mr. Geo. W. Knutson, Librarian.
Regular fifty-volume libraries for general reading. Books on
subjects of study.

CANTRIL—VAN BUREN COUNTY.

Taxpayers, - - - - - Mr. Albert Jericho, Librarian.
Regular fifty-volume libraries for general reading.

CEDAR RAPIDS—LINN COUNTY.

Free Public Library, - - - - - Miss Harriet A. Wood, Librarian.
Regular fifty-volume libraries for use in county.

CENTRAL CITY—LINN COUNTY.

John H. Clegg Library, - - - Mrs. Howard Bliss, Librarian.
Regular fifty-volume libraries for general reading. Books for blind.

CENTRAL CITY—LINN COUNTY.

School Library, - - - - - Mr. Jay Sawyer, Librarian.
Regular fifty-volume libraries. Books on subjects of study.

CHARITON—LUCAS COUNTY.

Free Public Library, - - - Miss Margaret W. Brown, Librarian.
Regular libraries. General loans of fifty volumes for use in county.

CHARLES CITY—FLOYD COUNTY.

High School, - - - - - Miss Fannie R. Wilson, Librarian.
Books on subjects of study.

CHEROKEE—CHEROKEE COUNTY.

Art Club, - - - - - Mrs. Mary L. Loomis, Librarian.
Books on subject of club study (Egyptian Art, etc.).

CHEROKEE—CHEROKEE COUNTY.

Tone Circle, - - - - - Mrs. Mary M. Delaplane, Librarian.
Books on subjects of club study.

CHEROKEE—CHEROKEE COUNTY.

State Hospital, - - - - - Mrs. M. N. Volding, Librarian.
General loan collection of books.

CLARENCE—CEDAR COUNTY.

Taxpayers, - - - - - Thomas F. Roche, Librarian.
Regular fifty-volume libraries for general reading.

CLARKSVILLE—BUTLER COUNTY.

Woman's Club, - - - - - Mrs. Agnes Day, Librarian.
Regular fifty-volume libraries for general reading.

CLINTON—CLINTON COUNTY.

Federal Labor Union, - - - - - Mr. G. C. Campbell, Librarian.
Regular fifty-volume library for general reading.

COLFAX—JASPER COUNTY.

Free Public Library, - - - Miss Floretta Ogan, Librarian.
Regular libraries for general reading. Books on subjects of club study.

CONROY—IOWA COUNTY.

Shimer Library Association, - - - Mr. H. A. Ahrens, Librarian.
Regular fifty-volume library for general reading.

COON RAPIDS—CARROLL COUNTY.

Taxpayers, - - - - - Mrs. Edward Garst, Librarian.
Regular libraries. General loan for young people. Books on subjects of club study.

COON RAPIDS—CARROLL COUNTY.

Star Reading Circle, - - - - Mr. Ben Phillips, Librarian.
General loans for young people. Regular library.

CORNING—ADAMS COUNTY.

Free Public Library, - - - - Mrs. C. H. Bryant, Librarian.
Regular library for use in county. Books on subjects of club study.

DALLAS CENTER—DALLAS COUNTY.

Taxpayers, - - - - Miss Georgia E. Sumner, Librarian.
Regular libraries for general reading. Books on subjects of
club study.

DALLAS CENTER—DALLAS COUNTY.

Sugar Grove, No. 5, - - - - Miss Alice Temple, Librarian.
General loan libraries of fifty volumes for young people.
General loans for young people.

DENMARK—LEE COUNTY.

Taxpayers, : - - - - Miss Mary E. Houston, Librarian.
Regular libraries for general reading.

DES MOINES—POLK COUNTY.

Greenwood Sunday School, - - - - Mr. O. M. Coates, Librarian

DE WITT—CLINTON COUNTY.

Public Library, - - - - Miss Elsie Saxton, Librarian.
Regular libraries for general reading.

DIKE—GRUNDY COUNTY.

Taxpayers, - - - - Mr. L. F. Grenier, Librarian.
Regular libraries for general reading.

DUNLAP—HARRISON COUNTY.

Fortnightly Club, - - - - Miss Elizabeth Patterson, Librarian.
Regular libraries for general reading; also general loans for
young people.

DURANT—CEDAR COUNTY.

Fortnightly Club, - - - - Miss Emma M. Bohstedt, Librarian.
Books for club study. Library for general use.

EAGLE GROVE—WRIGHT COUNTY.

Free Public Library, - - - - Mrs. B. Y. Miller, Librarian.
Regular libraries for general reading; also books on subjects of
club study.

EARLY—SAC COUNTY.

Taxpayers, - - - - Mr. John C. Amarine, Librarian.
Regular libraries for general reading.

ELDORA—HARDIN COUNTY.

Free Public Library, - - - Miss Clara Estabrook, Librarian.
Regular libraries for general reading; also, books on subjects of
club study.

ELKADER—CLAYTON COUNTY.

Taxpayers, - - - Mrs. F. G. Leibrock, Librarian.
Regular libraries for general reading.

EMMETSBURG—PALO ALTO COUNTY.

Library Association, - - - Mr. C. F. Curtis, Librarian.
Regular libraries for general reading; also, books on subjects of
club study.

ESTHERVILLE—EMMET COUNTY.

Free Public Library, - - - Mrs. H. A. Davidson, Librarian.
Regular libraries for general reading; also, books on subjects of
club study.

EXIRA—AUDUBON COUNTY.

Thursday Club, - - - Mrs. B. H. Born, Librarian.
Regular libraries for general reading.

FAIRBANK—BUCHANAN COUNTY.

Tourist Club, - - - Mrs. Ward B. Agnew, Librarian.
Books on subjects of club study.

FOREST CITY—WINNEBAGO COUNTY.

Tourist Club, - - - Mrs. A. V. Erricson, Librarian.
Books on subjects of club study.

FOREST CITY—WINNEBAGO COUNTY.

Free Public Library, - - - Mrs. R. H. Bahner, Librarian.
Books for the blind.

GERMANIA—KOSSUTH COUNTY.

Literary Society, - - - Miss Pearl W. Knickerbocker, Librarian.
Regular libraries for general reading.

GILMORE CITY—POCAHONTAS COUNTY.

Saturday Study Club, - - - Mrs. Kate M. Wolcott, Librarian.
Books on subjects of club study.

GLADBROOK—TAMA COUNTY.

Reading and Study Club, - - - Mrs. E. W. Gardner, Librarian.
Regular libraries for general reading; also, books on subjects of
club study.

GLENWOOD—MILLS COUNTY.

Free Public Library, - - - H. E. Lyons, Librarian.
Regular libraries for general reading.

GLIDDEN—CARROLL COUNTY.

Taxpayers, - - - - - Mr. Kitt W. Marean, Librarian.
Regular libraries for general reading.

GLIDDEN—CARROLL COUNTY.

Goldenrod Magazine Club, - - - Mrs. E. M. Golding, Librarian.
Regular libraries for general reading.

GOWRIE—WEBSTER COUNTY.

Society of Christian Endeavor, - - - Mr. G. E. McDougal, Librarian.
General loan libraries for young people.

GRAND VIEW—LOUISA COUNTY.

Woman's Missionary Society, - - - Miss Lila Hunter, Librarian.
Regular libraries for general reading.

GREENFIELD—ADAIR COUNTY.

Library Association, - - - - - Mr. J. E. Brooks, Librarian.
Regular libraries for general reading.

GRINNELL—POWESHIEK COUNTY.

Free Public Library, - - - - - Miss Mary E. Wheelock, Librarian.
Books on subjects of club study.

GUTHRIE CENTER—GUTHRIE COUNTY.

Woman's Club, - - - - - Nellie Young, Librarian.
Regular libraries for general reading.

HANLONTOWN—WORTH COUNTY.

Independent School District, - - - Mr. O. E. Gunderson, Librarian.
General loan libraries for young people.

HARLAN—SHELBY COUNTY.

P. E. O. Society, - - - - - Mrs. Edith Booth, Librarian.
Regular libraries for general reading.

HARTLEY—O'BRIEN COUNTY.

Public Library, - - - - - Mr. R. G. Allen, Librarian.
Regular libraries for general reading.

HAWARDEN—SIOUX COUNTY.

Free Public Library, - - - - - Miss Jennie P. Smith, Librarian.
Regular libraries for general reading; also, books on subjects of club study.

HILLSDALE—MILLS COUNTY.

Silver Grange, No. 1702, - - - - - Mrs. Ida Judson, Librarian.
Regular libraries for general reading.

HOSPERS—SIOUX COUNTY.

Library Association, - - - - - Mr. H. H. Hickman, Librarian.
Regular libraries for general reading.

HUMBOLDT—HUMBOLDT COUNTY.

Humboldt College Library, - - - Mr. J. P. Peterson, Librarian.
General loan library for reference.

IDA GROVE—IDA COUNTY.

Civic Club, - - - - - Dr. G. C. Moorehead, Librarian.
Regular libraries for young people.

INDEPENDENCE—BUCHANAN COUNTY.

Ladies' Literary Society, - - - Miss Effie Jacobs, Librarian.
Books on subjects of club study.

INDIANOLA—WARREN COUNTY.

Simpson College Library, - - - Miss Martha Stahl, Librarian.
Regular libraries for general reading.

INDIANOLA—WARREN COUNTY.

Mt. Hope School Library, - - - Mr. S. M. Cart, Librarian.
General loan libraries for young people.

INWOOD—LYON COUNTY.

Taxpayers, - - - - - Mr. J. C. Watson, Librarian.
Regular libraries for general reading.

IOWA FALLS—HARDIN COUNTY.

Free Public Library, - - - Mrs. Florence G. Anders, Librarian.
Books on subjects of club study.

IRVINGTON—KOSSUTH COUNTY.

The Study Club, - - - - - Mr. H. A. Lewis, Librarian.
Regular libraries for general reading.

JEFFERSON—GREENE COUNTY.

Margaret Fuller Club, - - - - Libbie C. Howard, Librarian.
Books on subjects of club study.

KEOKUK—LEE COUNTY.

Free Public Library, - - - Miss Nannie P. Fulton, Librarian.
Books on subjects of club study.

KEOTA—KEOKUK COUNTY.

P. E. O. Society, - - - - - Katie B. Glover, Librarian.
Regular libraries for general reading.

KNOXVILLE—MARION COUNTY.

Taxpayers, - - - - - Miss Amanda Elliott, Librarian.
Regular libraries for general reading; also, books on subjects of club study.

LAKE CITY—CALHOUN COUNTY.

Amphyctian Society, - - - - Miss Bessie Davis, Librarian.
Regular libraries for general reading.

LAMONI—DECATUR COUNTY.

Public Schools, - - - - - Mr. H. S. Buffum, Librarian.
General loan libraries for young people.

LA PORTE CITY—BLACK HAWK COUNTY.

W. C. T. U. Library, - - - - - Mrs. Neal Randolph, Librarian.
Regular libraries for general reading.

LAURENS—POCAHONTAS COUNTY.

Library Association, - - - - - Mrs. C. E. Strain, Librarian.
Regular libraries for general reading; also, books on subjects of club study.

LE GRAND—MARSHALL COUNTY,

Public Schools, - - - - - Mr. A. M. Hanson, Librarian.
General loan libraries for young people.

LE GRAND—MARSHALL COUNTY.

Summerbell Library, Palmer College, - - - Mr. C. B. Fortner, Librarian.
Regular libraries for general reading.

LEON—DECATUR COUNTY.

The Thirteen Club, - - - - - Mrs. I. N. Beard, Librarian.
Books on subjects of club study.

LENOX—TAYLOR COUNTY.

Independent School District, - - - - - Mr. E. E. Kuhn, Librarian.
General loan libraries for young people.

LINDEN—DALLAS COUNTY.

Linn Township Library Association, - - - Miss Sarah Duck, Librarian.
Regular libraries for general reading.

LOHRVILLE—CALHOUN COUNTY.

Public Schools, - - - - - Mr. Walter W. Bell, Librarian.
General loan libraries for young people.

LUCAS—LUCAS COUNTY.

Public Schools, - - - - - Mr. F. M. Hayner, Librarian.
General loan libraries for young people.

MACEDONIA—POTTAWATTAMIE COUNTY.

Free library, - - - - - Mrs. R. F. C. Chambers, Librarian.
Regular libraries for general reading.

MADRID—BOONE COUNTY.

Garden Prairie Sunday School, - - - - - Mr. Ed C. Johnson, Librarian.
Country neighborhood—Regular libraries for general reading.

MALCOM—POWESHIEK COUNTY.

High School, - - - - - Mr. S. Harold Wood, Librarian.
Regular libraries for general reading.

MANCHESTER—DELAWARE COUNTY.

Free Public Library, - - - - Mrs. Jennie Jones, Librarian.
Regular libraries for general reading; also, books on subjects of
club study.

MANCHESTER—DELAWARE COUNTY.

Tourist Club, - - - - Margaret H. Dittmer, Librarian.
Books on subject of club study.

MANILLA—CRAWFORD COUNTY.

Chautauqua Circle, - - - - Mrs. Anna Smithurst, Librarian.
Regular libraries for general reading; also, books on subject of
club study.

MANNING—CARROLL COUNTY.

Woman's Club, - - - - Miss Mary Miceller, Librarian.
Books on subjects of club study.

MAPLETON—MONONA COUNTY.

Tuesday Club, - - - - Mrs. E. M. Talboy, Librarian.
Books on subjects of club study.

MARBLE ROCK—FLOYD COUNTY.

Taxpayers, - - - - Mr. E. W. Speedling, Librarian.
Regular libraries for general reading.

MARION—LINN COUNTY.

Taxpayers, - - - - Mr. W. T. Coffey, Librarian.
Regular libraries for general reading.

MARION—LINN COUNTY.

Free Public Library, - - - - Miss Mary L. Parkhurst, Librarian.
General loan libraries for young people.

MARSHALLTOWN—MARSHALL COUNTY.

Free Public Library, - - - - Mrs. M. M. Battis, Librarian.
Regular libraries for general reading for use in county.

MASON CITY—CERRO GORDO COUNTY.

Free Public Library, - - - - Mrs. Anna H. Chapin, Librarian.
Books on subjects of club study.

MECHANICSVILLE—CEDAR COUNTY.

District Agricultural Society, - - - - Mr. C. E. Gould, Librarian.
Regular libraries for general reading.

MILFORD—DICKINSON COUNTY

Woman's Club, - - - - Mrs. George P. Woods, Librarian.
Regular libraries for general reading; also, books on subjects of
club study.

MONTEZUMA—POWESHIEK COUNTY

Library Circle, - - - - - Mr. Charles W. Clark, Librarian.
Regular libraries for general reading.

MOUNT AYR—RINGGOLD COUNTY.

Essayists Club, - - - - - Miss Mamie McMasters, Librarian.
Books on subjects of club study.

MUSCATINE—MUSCATINE COUNTY.

P. M. Musser Library, - - - - - Mrs. E. L. Mahin, Librarian.
General loan libraries for use in South Muscatine.

MUSCATINE—MUSCATINE COUNTY.

Girls' Friendly Society, - - - - - Miss Margaret Leffler, Librarian.
General loan libraries for young people.

NASHUA—CHICKASAW COUNTY.

Free Public Library, - - - - - Miss Fannie V. Eastman, Librarian.
Regular libraries for general reading.

NEMAHA—SAC COUNTY.

Taxpayers, - - - - - Mr. C. L. Graffunder, Librarian.
Regular libraries for general reading.

NEW HAMPTON—CHICKASAW COUNTY.

Library Association, - - - - - Belle E. Powers, Librarian.
Regular libraries for general reading.

NEW LONDON—HENRY COUNTY.

Grant District Library, - - - - - Fanny Bishop, Librarian.
Country neighborhood, regular libraries for general reading.

NEW VIRGINIA—WARREN COUNTY.

Public School, - - - - - Miss Eva Robertson, Librarian.
General loan libraries for young people.

NORA SPRINGS—FLOYD COUNTY.

Public Schools, - - - - - Mr. E. F. Fisher, Librarian.
General loan libraries for young people.

NORTHWOOD—WORTH COUNTY.

New Century Club, - - - - - Mrs. Ida K. Toye, Librarian.
Books on subjects of club study.

OASIS—JOHNSON COUNTY.

Ladies T. A. Club, - - - - - Mrs. W. A. Rhymor, Librarian.
Regular libraries for general reading.

OELWEIN—FAYETTE COUNTY.

High School Library, - - - - - Mr. L. B. Moffitt, Librarian.
Regular libraries for general reading.

OELWEIN—FAYETTE COUNTY.

Tuesday Tourist Club, - - - - Mrs. J. H. Millard, Librarian.
Books on subjects of club study.

OSCEOLA—CLARKE COUNTY.

Y. M. C. A., - - - - Mr. B. R. Van Patten, Librarian.
Regular libraries for general reading.

OTTUMWA—WAPELLO COUNTY.

Taxpayers, - - - - Mr. William Williams.
Country neighborhood. Regular libraries for general reading.

OXFORD JUNCTION—JONES COUNTY.

Taxpayers, - - - - Mr. Frank H. Shimanek, Librarian.
Regular libraries for general reading.

PANORA—GUTHRIE COUNTY.

Political Equality Club, - - - - Miss Milda Boblett, Librarian.
Regular libraries for general reading.

PERRY—DALLAS COUNTY.

Wednesday Club, - - - - Mrs. L. A. French, Librarian.
Books on subjects of club study.

PETERSON—CLAY COUNTY.

Woman's Club, - - - - Mrs. Leona Barber, Librarian.
Books on subjects of club study.

POLK CITY—POLK COUNTY.

Civic Club, - - - - Mrs. Florence K. Anderson, Librarian.
Regular libraries for general reading.

POMEROY—CALHOUN COUNTY.

S. A. K. Club, - - - - Mrs. Sarah McKeen, Librarian.
Regular library for general reading; also, books on subjects of club study.

REDFIELD—DALLAS COUNTY.

Woman's Club, - - - - Miss Delle N. Scott, Librarian.
Books on subjects of club study.

REINBECK—GRUNDY COUNTY.

Taxpayers, - - - - Junger & Meyers, Librarians.
Regular libraries for general reading.

RHODES, MARSHALL COUNTY.

Public School Library, - - - - Mr. W. H. Fort, Librarian.
General loans for young people.

RIPPEY—GREENE COUNTY.

High School, - - - - Mr. H. A. Glackemyer, Librarian.
General loan library for young people.

ROCKWELL—CERRO GORDO COUNTY.

Woman's Club, - - - - - Mrs. Mary C. Graves, Librarian.
Books on subjects of club study.

ROCKWELL CITY—CALHOUN COUNTY.

Sunday School Library - - - - - Rev. J. O. Snodgrass, Librarian.
Regular libraries for general reading.

ROCKWELL CITY—CALHOUN COUNTY.

Tourist Club, - - - - - Mary Cook, Librarian.
Books on subjects of club study.

ROGERS—LINN COUNTY.

Library Association, - - - - - Mr. I. U. Minehart, Librarian.
Regular libraries for general reading.

ROYAL—CLAY COUNTY.

Woman's Club, - - - - - Mrs. E. D. W. Benthall, Librarian.
Books on subjects of club study.

RUSSELL—LUCAS COUNTY.

Taxpayers, - - - - - Mr. S. W. Rowley, Librarian.
Regular libraries for general reading.

RUSSELL—LUCAS COUNTY.

Mission Circle, - - - - - Mrs. H. H. Nelson, Librarian.
Books on subjects of club study.

SAINT ANSGAR—MITCHELL COUNTY.

Public School Library, - - - - - Mr. J. P. Lund, Librarian.
General loan libraries for young people.

SANBORN—O'BRIEN COUNTY.

Public Library, - - - - - Miss Nannie Johnson, Librarian.
Regular libraries for general reading; also, books on subjects of club study.

SCHALLER—SAC COUNTY.

Library Association, - - - - - Mrs. A. P. Searle, Librarian.
Regular libraries for general reading.

SCOTCH GROVE—JONES COUNTY.

Taxpayers, - - - - - Mrs. D. O. Sinclair, Librarian.
Regular libraries for general reading.

SEEVERS—JASPER COUNTY.

Library Association, - - - - - Leona West, Librarian.
General loan libraries for young people.

SHELBY—SHELBY COUNTY.

Reading Circle, - - - - - Mary E. Tate, Librarian.
Books on subjects of club study.

SLATER—STORY COUNTY.

Literary Society, - - - - Mr. T. W. Rawson, Librarian.
Regular libraries for general reading.

SPENCER—CLAY COUNTY.

Woman's Club, - - - - Mrs. M. E. Kostenbader, Librarian.
Books on subjects of club study.

SPERRY—DES MOINES COUNTY.

Library Association, - - - - Mr. C. I. Furry, Librarian.
Regular libraries for general reading.

SPIRIT LAKE—DICKINSON COUNTY.

Library Association, - - - - Mrs. Francis M. Davis, Librarian.
Regular libraries for general reading.

SPRINGVILLE—LINN COUNTY.

Springville Library, - - - - Mr. O. E. Crane, Librarian.
General loan library for young people.

STATE CENTER—MARSHALL COUNTY.

C. L. S. Circle, - - - - Mrs. J. F. Cowan, Librarian.
Regular libraries for general reading; also, books on subjects of
club study.

STUART—GUTHRIE COUNTY.

Free Public Library, - - - - Mrs. J. R. McMullin, Librarian.
General loan libraries for young people.

TAMA—TAMA COUNTY.

Woman's Club Library, - - - - Mrs. J. W. Willett, Librarian.
Regular libraries for general reading.

THORNTON—CERRO GORDO COUNTY.

Public School Library, - - - - Mr. F. H. Sunderlin, Librarian.
Regular libraries for general reading.

TINGLEY—RINGGOLD COUNTY.

Public School Library, - - - - Mr. Charles Murray, Librarian.
General loan libraries for young people.

TIPTON—CEDAR COUNTY.

Free Public Library, - - - - Mrs. Anna Shaw Yates, Librarian.
Books on subjects of club study.

VAN CLEVE—MARSHALL COUNTY.

Taxpayers, - - - - Mr. Ira G. Hambleton, Librarian.
Regular libraries for general reading.

VAN METER—DALLAS COUNTY.

Jefferson Center Association, - - Miss Clara'Brooker, Librarian.
Regular library for general reading.

VICTOR—IOWA COUNTY.

Taxpayers, - - - - Miss Ethel Kerr, Librarian.
Reguar libraries for general reading.

VILLISCA—MONTGOMERY COUNTY.

Public Library, - - - - Miss Frankie Barker, Librarian.
Regular libraries for general reading.

VINTON—BENTON COUNTY.

Free Public Library, - - - - Mrs. J. R. Adams, Librarian.
Regular libraries for general reading; also, books on subjects of club study.

WAPELLO—LOUISA COUNTY.

Tribune Library, - - - - Mr. R. L. Reilley, Librarian.
Regular libraries for general reading.

WAUKEE—DALLAS COUNTY.

Taxpayers, - - - - Mr. James R. Whinery, Librarian.
Regular libraries for general reading.

WEBSTER CITY—HAMILTON COUNTY.

Sunny Side School District, No. 3, - - Miss Alice]Welch, Librarian.
General loan library for young people.

WEBSTER CITY—HAMILTON COUNTY.

Pleasant Valley School, - - - - Miss Flora James, Librarian.
General loan library for young people.

WELDON—DECATUR COUNTY.

Public School, - - - - Mr. S. L. Hill, Librarian.
General loan library for young people.

WEST BRANCH—CEDAR COUNTY.

Young People's Union, - - - - Miss Bertha Armstrong, Librarian.
General loan libraries for young people.

WEST LIBERTY—MUSCATINE COUNTY.

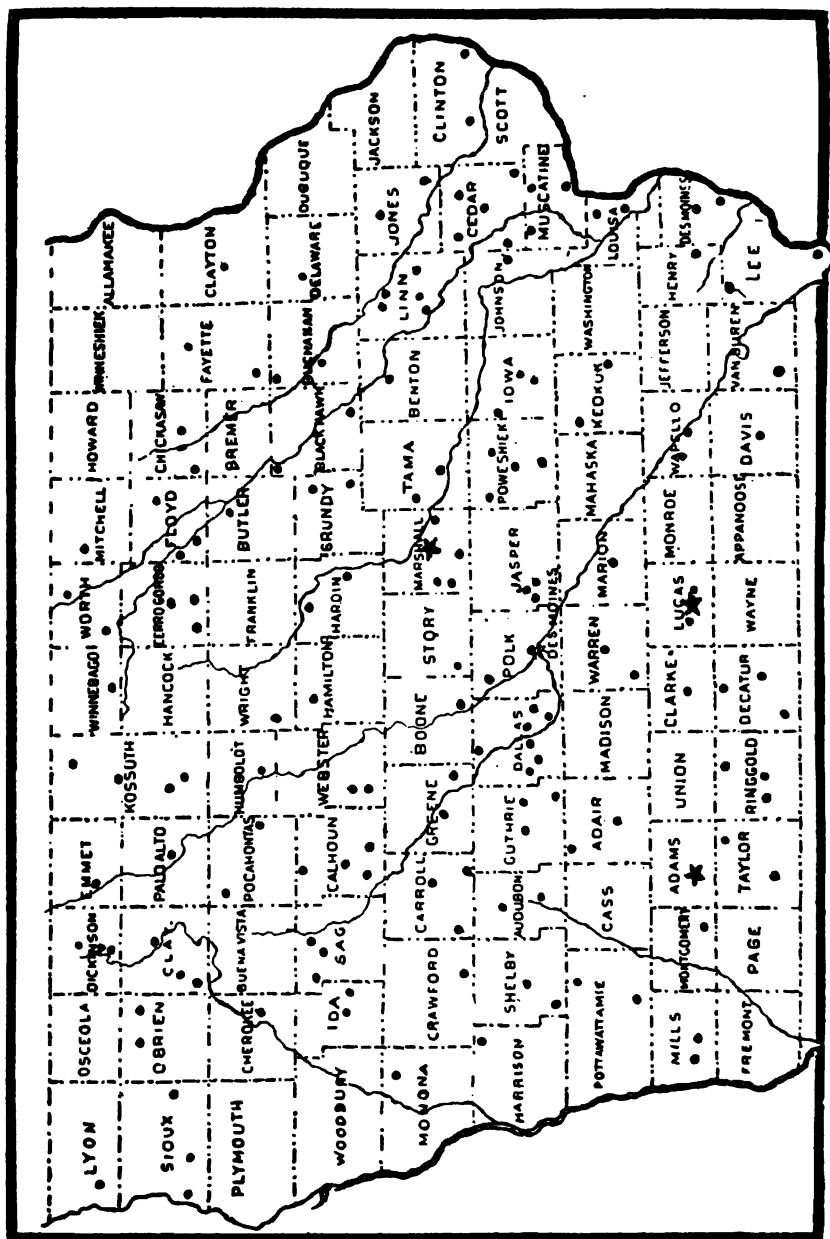
Free Public Library, - - - - Mrs. Lou Hauer, Librarian.
General Loan libraries for young people; also, books on subjects of club study.

WEST UNION—FAYETTE COUNTY.

Library Association, - - - - Miss Mabel Dickey, Librarian.
Regular libraries for general reading.

WHAT CHEER—KEOKUK COUNTY.

Thursday Club, - - - - Mrs. Myer Carl, Librarian.
Regular libraries for general reading.



MAP SHOWING FREE TRAVELING LIBRARY CENTERS IN IOWA.

WILLIAMSBURG—IOWA COUNTY.

School Library, - - - - - Mr. Bruce Francis, Librarian.
General loan libraries for young people.

WILTON JUNCTION—MUSCATINE COUNTY.

Library Association, - - - - - Mrs. Emma Ingham, Librarian.
Regular libraries for general reading.

WINSLOW—BLACK HAWK COUNTY.

Taxpayers, - - - - - Mrs. Charles Matz, Librarian.
Regular libraries for general reading.

TRAVELING LIBRARY CENTERS ARRANGED BY COUNTIES.

County seats which are starred have been used as distributing points from which a number of libraries have been loaned to surrounding communities. The names of these have not been included, as said communities were under agreement with county center.

ADAIR:	CEDAR:	DALLAS:
Adair.	Clarence.	Adel.
Greenfield.	Durant.	Dallas Center.
ADAMS:	Mechanicsville.	Linden.
Corning.*	Tipton.	Perry.
AUDUBON:	West Branch.	Redfield.
Audubon.	CERRO GORDO:	Van Meter.
Exira.	Mason City.	Waukee.
BENTON:	Rockwell.	DAVIS:
Vinton.	Thornton.	Bloomfield.
BOONE:	CHEROKEE:	DECATUR:
Madrid.	Cherokee. (3)	Lamoni.
BUCHANAN:	CHICKASAW:	Leon.
Fairbank.	Nashua.	Weldon.
Independence.	New Hampton.	DELAWARE:
BLACK HAWK:	CLARKE:	Manchester. (2)
La Porte City.	Osceola.	DES MOINES:
Winslow.	CLAY:	Burlington.
BUTLER:	Peterson.	Sperry.
Clarksville.	Royal.	DICKINSON:
CALHOUN:	Spencer.	Arnold's Park.
Lake City.	CLAYTON:	Milford.
Lohrville.	Elkader.	Spirit Lake.
Pomeroy.	CLINTON:	EMMET:
Rockwell City. (2)	Clinton.	Estherville.
CARROLL:	De Witt.	FAYETTE:
Coon Rapids. (2)	CRAWFORD:	Oelwein. (2)
Glidden. (2)	Manilla.	West Union.
Manning.		

FLOYD: Charles City. Marble Rock. Nora Springs.	LEE: Denmark. Keokuk.	POTTAWATTAMIE Avoca. Macedonia.
GREENE: Jefferson. Rippey.	LOUISA: Grandview. Wapello.	POWESHIEK: Brooklyn. Grinnell. Malcolm. Montezuma.
GRUNDY: Dike. Reinbeck.	LINN: Cedar Rapids. Central City. (2) Marion. (2) Rogers. Springville.	RINGGOLD: Benton. Mt. Ayr. Tingley.
GUTHRIE: Guthrie Center. Panora. Stuart.	LUCAS: Chariton.* Lucas. Russell. (2)	SAC: Early. Nemaha. Schaller.
HAMILTON: Webster City. (2)	LYON: Inwood.	SHELBY: Harlan. Shelby.
HARDIN: Eldora. Iowa Falls.	MILLS: Glenwood. Hillsdale.	SIOUX: Hawarden. Hospers.
HARRISON: Dunlap.	MARION: Knoxville.	STORY: Slater.
HENRY: New London.	MITCHELL: St. Ansgar.	TAMA: Gladbrook. Tama.
HUMBOLDT: Humboldt.	MONONA: Mapleton.	TAYLOR: Bedford. (2) Lenox.
IDA: Arthur. Ida Grove.	MARSHALL: Le Grand. (2) Marshalltown.* Rhodes. State Center. Van Cleve.	VAN BUREN: Cantril.
IOWA: Conroy. Victor. Williamsburg.	MONTGOMERY: Villisca.	WAPELLO: Bidwell. Ottumwa.
JASPER: Colfax. Andersonville. Seevers.	MUSCATINE: Muscatine. (2) West Liberty. Wilton Junction.	WARREN: Indianola. (2) New Virginia.
JOHNSON: Oasis.	O'BRIEN: Hartley. Sanborn.	WEBSTER: Callendar. Gowrie.
JONES: Oxford Junction. Scotch Grove.	PALO ALTO: Emmetsburg.	WINNEBAGO: Forest City. (2)
KOSSUTH: Algona. Burt. (2) Germania. Irvington.	POCAHONTAS: Gilmore City. Laurens.	WORTH: Hanlontown. Northwood.
KEOKUK: Keota. What Cheer.	POLK: Des Moines. Polk City.	WRIGHT: Eagle Grove.

PART II.

**FREE PUBLIC LIBRARIES
OF IOWA.**

**HISTORICAL SKETCHES
1903.**

PREFATORY NOTE.

Sketches of the seventy-seven free public libraries in Iowa are given herewith, setting forth briefly the history of these libraries and their present condition. It has been impossible to give detailed information regarding the local influences and efforts which have led to the organization of these libraries and which have contributed to their growth and development, as space forbids. It is, however, gratifying to see how these libraries have grown from very small beginnings and have been fostered and developed under the provisions of the library laws of the State.

The chief purpose for which the Library Commission exists is to encourage and aid the establishment of free public libraries in the State, and the present gratifying condition of the free public libraries attests the usefulness of the Library Commission in this respect. At the time of the creation of the Library Commission in 1900 there were forty-eight free public libraries in the State; the growth therefore, as to numbers, has been gratifying. As to the improved condition of the older libraries, there is also reason for encouragement, and the increasing number of volumes contained in these libraries and the large annual circulation of books, as set forth in the table contained in the Appendix, show that this great system of popular education has thoroughly taken hold of the people of our Commonwealth.

FREE PUBLIC LIBRARIES.

ALGONA.

On April 30, 1899, a banquet was given in Algona by the Woman's Christian Temperance Union, the proceeds of which were to be used in maintaining a public reading room, which had just been opened by the organization. At this time, Mrs. W. H. Ingham was president of the Union and Mrs. Lizzie B. Read acting secretary.

By private donations and public entertainments of various kinds, a small collection of books was obtained for use in the room. In January, 1890, the books were put in circulation, and this was the beginning of the movement which culminated in the Algona Free Public Library. Books were loaned each Saturday afternoon and evening, one person being appointed to care for the little library for three months. In return for this service, a yearly ticket was given.

In a few months, a reading room association was formed to work in conjunction with the W. C. T. U. in support of the library. In 1893 a reorganization of these societies resulted in the Algona Library Association. This association continued until 1896, when it was again reorganized as the Woman's Library Aid Society.

In March, 1894, a meeting was called in Algona for the purpose of considering the advisability of organizing a public library association; this was finally organized and incorporated September 12, 1894.

Strenuous efforts were put forth in behalf of the new scheme. The city was canvassed for funds. Pupils of the public schools were given free use of the books.

In September, 1894, the ladies of the Algona Library Association turned over to the newly incorporated body, their library and other property and pledged themselves to aid in maintaining a public library. The association, in order to increase the number of books in the library, made an agreement by which the books of the Algona Monday Club were placed in the library rooms, though kept as a distinct collection. The Monday Club, a company of ladies, was incorporated in 1878, having been organized several years earlier. A choice collection of over six hundred volumes had been gathered together, and the books were in circulation as a subscription library at the time the proposition was made by the Algona Library Association.

In June, 1897, the president of the association, Thos. F. Cooke, was appointed to appear before the city council and ask that the question of a tax-supported library be submitted to the voters at the next election. The council submitted the question to the people, and after a warm and exciting contest the library tax failed to carry.

The following year the council was again requested by the association to submit the question to a vote of the people, and in March, 1898, the tax was voted, establishing the Free Public Library. In consideration of the vote, the association turned over to the city, all property belonging to the association. The Monday Club transferred its library to the city, and the Free Public Library was opened to the public January 3, 1899.

Miss Jordan, the former librarian, went to Chicago for library training at Armour Institute, and Mr. McElroy was elected librarian January 10, 1896. He gave most efficient and gratifying service until the middle of December, 1902, when ill health compelled him to take a vacation and later to tender his resignation. Mrs. L. M. Horton succeeded him and is the present librarian.

The library has been the recipient of a thousand dollar gift from Mr. George Schee, of Primghar, Iowa, to be used as a book fund for the school department. The citizens of Algona increased this fund to \$3,000. \$2,400 of this money has already been judiciously expended. The school department collection was selected from the Pittsburgh Carnegie Library list, and contains all the books given in that library's catalog of 1900, with the exception of books for the high school and duplicates. Ten of the Pittsburgh Library lists were purchased and placed in the hands of school teachers, to facilitate their use of the books.

The library in co-operating with the schools, allows to teachers the privilege of taking out school department books and using them until called for by the librarian. While in charge of the teacher, they may be used as reference books by the pupils.

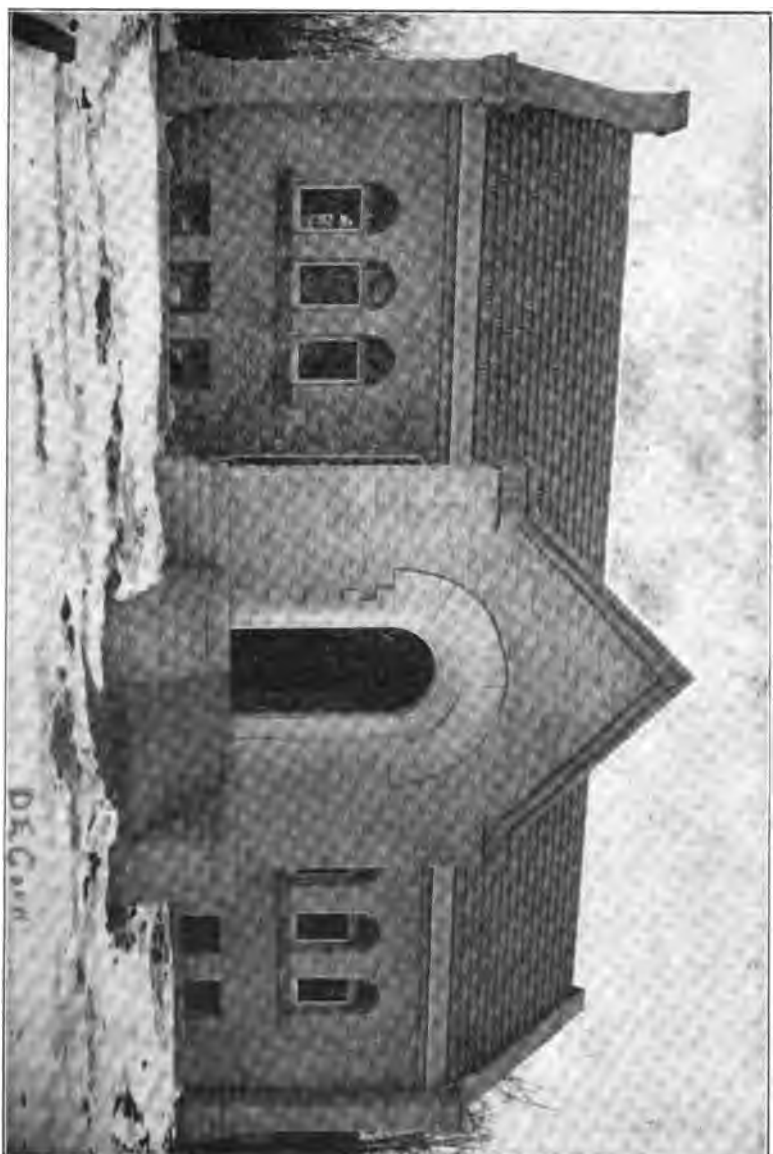
Nine thousand five hundred and eighty-seven books were issued for home use during the year 1899, the first year the library was opened to the public; 16,060 books were issued in 1902; 7,515 readers availed themselves of the privileges of the reading room.

The library contains 4,385 books, a little less than 33 per cent of which are fiction. Its quarters at present are two rooms on the ground floor of the G. A. R. building. One corner has been fitted up by the ladies of the Algona Library Aid Society as a children's corner. The walls are covered with pictures, mostly copies of the old masters. The low shelves contain the books so eagerly read by the little people. Specimens, largely zoological, have been contributed or loaned by interested residents. A new Carnegie building will be erected soon, at a cost of \$10,000, on a beautiful lot donated by Colonel Ingham.

The members of the present board of trustees are as follows: Mrs. W. K. Ferguson, president; N. Spencer, vice president; Mrs. A. L. Rist, secretary; Mrs. W. H. Ingham, E. J. Murtagh, Mrs. M. Starr, S. E. McMahon, E. J. Gilmore, T. P. Harrington.

AMES.

A library organization which was incorporated had made an effort to establish a public library in Ames, but finally stored the 500 volumes belonging to it, as there had not been funds to maintain a library. The P. E. O. Chapter owned about half the stock and so determined to secure a building, add to the nucleus of books and establish for Ames a free public library.



ANAMOSA PUBLIC LIBRARY—GIFT OF D. A. R. AND CITIZENS.



ATLANTIC PUBLIC LIBRARY—CARNEGIE BUILDING

In December, 1902, a committee from this organization consulted the mayor and sent a communication signed by him to Mr. Andrew Carnegie. Mr. Carnegie offered the city \$10,000 with his usual provisions and at the municipal election in March, 1903, the city voted to establish and maintain a free public library and Mr. Carnegie's proposition was accepted. The following library board was appointed: Dr. O. H. Cessna, Geo. Judisch, J. G. Tilden, Mrs. M. K. Smith, Mrs. W. M. Greeley, Miss M. Lanning, J. J. Grove, J. Judge and Mrs. E. W. Stanton.

A lot was presented for the new building by Mrs. W. M. Greeley, a member of the board. Hallett & Rawson of Des Moines were chosen as architects and plans for the erection of the building are under way.

ANAMOSA.

In the winter of 1900, Mr. W. S. Benton of Minneapolis, a former resident of Anamosa, bequeathed to the city of Anamosa \$10,000 for the purchase of books, provided a suitable library building should be erected within three years. The city, being in debt, did not accept the offer. In April, 1900, at a meeting of the Francis Shaw Chapter of the Daughters of the American Revolution, the matter was presented and as the chapter was not devoting itself to any particular line of work it was decided that nothing could be more worthy and patriotic than to build a library. Within ten months, by various entertainments the chapter raised over one thousand five hundred dollars and a site was selected and purchased. Subscriptions were solicited and obtained from the citizens and these were supplemented by smaller sums raised by entertainments. The plans were submitted to a committee chosen from the members of the chapter and the work was under the constant and entire supervision of the Regent, Miss Helen L. Shaw. The building, exclusive of the site, cost \$9,500 and was accepted by the trustees of the Benton estate January 19, 1903, and then was presented by the D. A. R. Chapter to the city of Anamosa. The library is built of Anamosa stone, inside finish of natural oak.

The library was classified and cataloged by Miss Mabel G. West of the Illinois State Library School.

The members of the present board of trustees are as follows: F. O. Ellison, president; Park Chamberlain, secretary, Miss Helen L. Shaw, Mrs. H. M. Remley, Mrs. E. R. Moore, Mrs. Frank Bagley, C. L. Niles, Jr. Miss Cornelia McCarn is the librarian.

ATLANTIC.

At the March election of 1902, the citizens of Atlantic voted to establish a free public library. The question of a free library had been agitated for some time and was already before the people when the proposition from Mr. Carnegie for erecting a library building was received and immediately after the election the council accepted Mr. Carnegie's offer on the usual conditions.

The building, which is almost completed, with the grounds, will cost \$15,000; \$12,500 of this amount is the gift of Mr. Andrew Carnegie. The remainder was contributed by citizens of Atlantic.

The members of the present board of trustees are as follows: J. A. McWaid, president; W. A. Follette, secretary; James Stier, R. D. Wilken, C. M. Cole, J. B. Rockafellow, J. S. Goss, J. H. Marshall, R. H. Bailey.

The librarian, Miss Pearl Evans, has attended the Iowa Summer Library school at the State University.

BOONE.

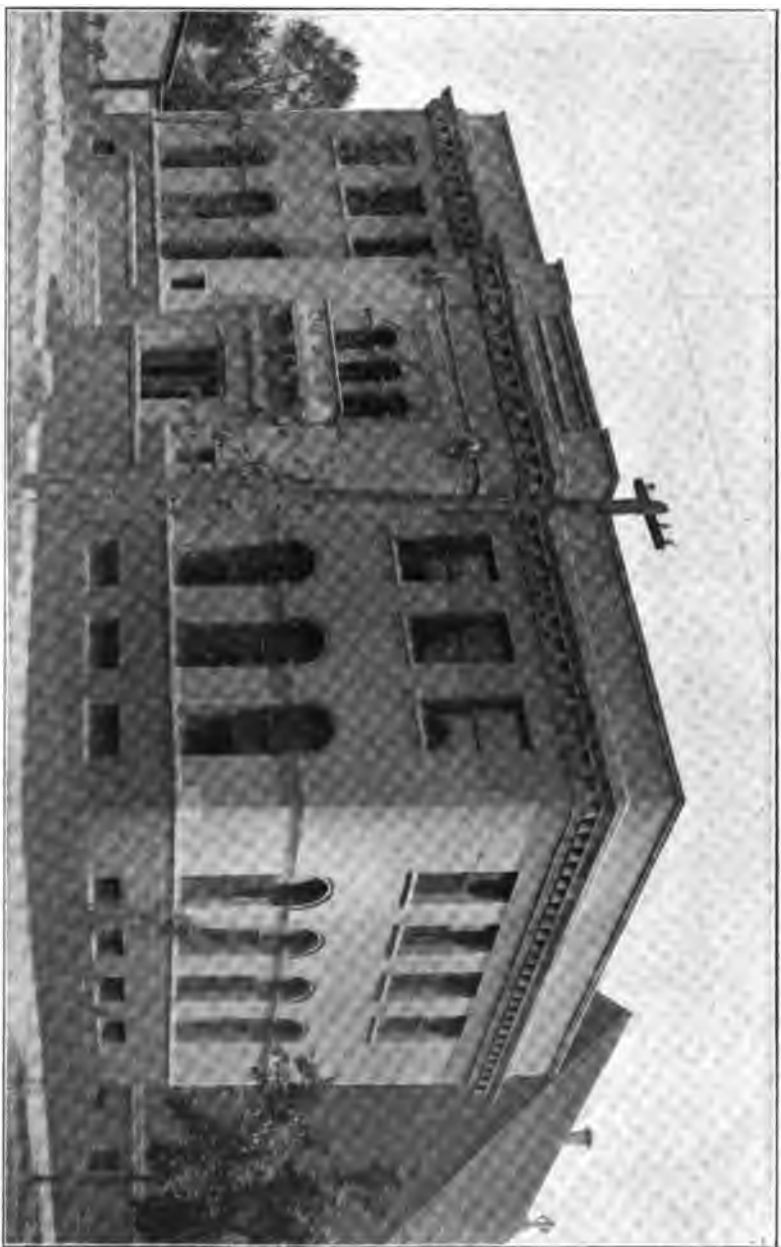
The inception of the public library movement in Boone was due to the action of twenty-four ladies of the place, who organized as "The Boone Reading Room Association," in September, 1885, with the design of providing an attractive resort for young men and boys who otherwise might roam the streets. Its assets consisted of a voluntary subscription of \$1 per year on the part of each member of the association, supplemented by voluntary donations of cash from other benevolent persons, and such spare magazines and papers as the newspaper offices could give it, and occasional entertainments with an entrance fee. A suitable room was obtained, plainly yet comfortably furnished, and the result justified the effort.

In February, 1888, the scope of the association was enlarged, articles of incorporation were made creating the Public Library Association of Boone, Iowa, which fell heir to the assets of the parent organization. After a year it was deemed safe to appeal to the people to accept the library law of the State, and at the spring election in 1889 this appeal was sustained, the city council was asked to accept the trust, and the books and furniture of the Public Library Association were turned over to the city's care in May, 1889, three trustees being chosen by the council as provided by the statutes.

In May, 1894, the mayor of Boone, acting under the provisions of the act of the Twenty-fifth General Assembly, appointed nine trustees, with terms of two, four and six years respectively, under whose direction the first card catalog of the books was made by Mrs. Mary F. Loomis, a graduate of the Albany, New York, Library School, and the systematic management of the Library was commenced. The result was seen in increased attendance and widened circulation of the volumes by the close of the first year, and constant like increase since that date.

In February, 1900, Senator Charles J. A. Ericson of Boone made a tender to the city council, proposing to erect a library building "to cost not less than \$10,000," upon condition that a suitable site be furnished by the city, and the same be forever maintained as a Public Library. In March such a site was obtained at a cost of \$4,500, and during the season the building was erected, the interior finish made in the winter following, and by October, 1901, was turned over to the city complete with its furnishings, books, heating plant and competent corps of attendants. Mr. Ericson's gift was increased, before the completion of the enterprise, to nearly \$12,000, and the entire structure as it now stands has cost nearly nineteen thousand dollars, exclusive of the value of the 8,200 books upon its shelves. The circulation during the preceding year has been 11,439, with a reference consultation probably exceeding these figures.

The members of the present board of trustees are as follows: Hon. C. J. A. Ericson, president; J. M. Brainard, secretary; Mrs. Flora E. Barkley, Mrs. J. R. Carey, Dr. A. A. Deering, C. T. Mason, J. J. Snell, J. H.



BOONE PUBLIC LIBRARY—GIFT OF HON. C. J. A. ERICSON.



BURLINGTON PUBLIC LIBRARY.

Andrews and S. R. Dyer. Miss Bessie Moffatt is the librarian. She attended the Iowa Summer School for Library Training, as did also Miss Alice Bibbs, the assistant librarian.

BURLINGTON.

On February 23, 1868, a meeting was called for the establishment in Burlington of a subscription library, known as the Public Library. The Hon. James W. Grimes contributed \$5,000. Three hundred citizens took shares of stock at \$10 each. The amount of dues entitling subscribers to draw books from the library was fixed at \$3 per annum. The library continued on this basis for nearly seventeen years, when owing to the failure of the organization to properly supply the needs of the community, only seventy-three subscribers having contributed to the support during the last year, the stockholders resolved by vote at their annual meeting in January, 1885, to donate the library to the city, provided a tax should be levied to sustain it as a free public library.

Mr. Philip M. Crapo interested himself in securing the payment of a debt against the library, the payment of which was a condition of acceptance by the city council. The gift was then accepted and the Free Public Library was established and installed in the council chamber of the city hall on July 7, 1885. Here it grew and prospered, although laboring under many disadvantages, until the completion of its present beautiful and commodious building, which was begun October 25, 1896, and completed for occupancy June 28, 1898.

At the date of the issue of this statement, July 1, 1903, the number of cards issued to patrons is 6,850, new series, representing the number of borrowers. Books received from the old organizations were 6,420. The present number of books in the library is 24,623.

Miss Miriam E. Carey, of the Illinois State Library school, was secured in 1900 to classify and catalog the library and in 1901 was elected librarian, which position she now holds.

The property of the Burlington Free Public Library represents a beautiful red stone, fireproof building centrally located and very pleasantly situated. The building was partially a gift from Philip M. Crapo and partially built by taxation. The building and site is easily worth \$100,000 and the contents of the library including books, works of art and an excellent museum are conservatively valued at \$40,000.

The members of the board of trustees are as follows: Philip M. Crapo, president; Dr. William Salter, John J. Fleming, W. W. Baldwin, H. Weinrich, Mrs. A. M. Antrobus, W. G. Mercer, W. B. Southwell.

CARROLL.

Late in 1893, the ladies of the Clio Club, a literary study club of Carroll, conceived the idea of establishing a library and set to work with that object in view, with the result that in March of 1894 they opened to the public a library of about two hundred and fifty volumes.

At this time, a charge of \$1 per year was made to card holders for the use of books, which charge was continued until November, 1898, when the books were made free to the public.

The entire expenses connected with the library were defrayed by the ladies of the club up to the year, 1900, when a tax for its support was voted by the citizens and the books then on hand, numbering about eleven hundred were given to the town.

The only location available being very undesirable, the trustees applied to Mr. Carnegie for assistance in the construction of a suitable building for housing the library and he has given \$10,000 on the customary conditions and the board of trustees have accepted plans by Thomas R. Kimball, architect of Omaha (Neb.), for its construction.

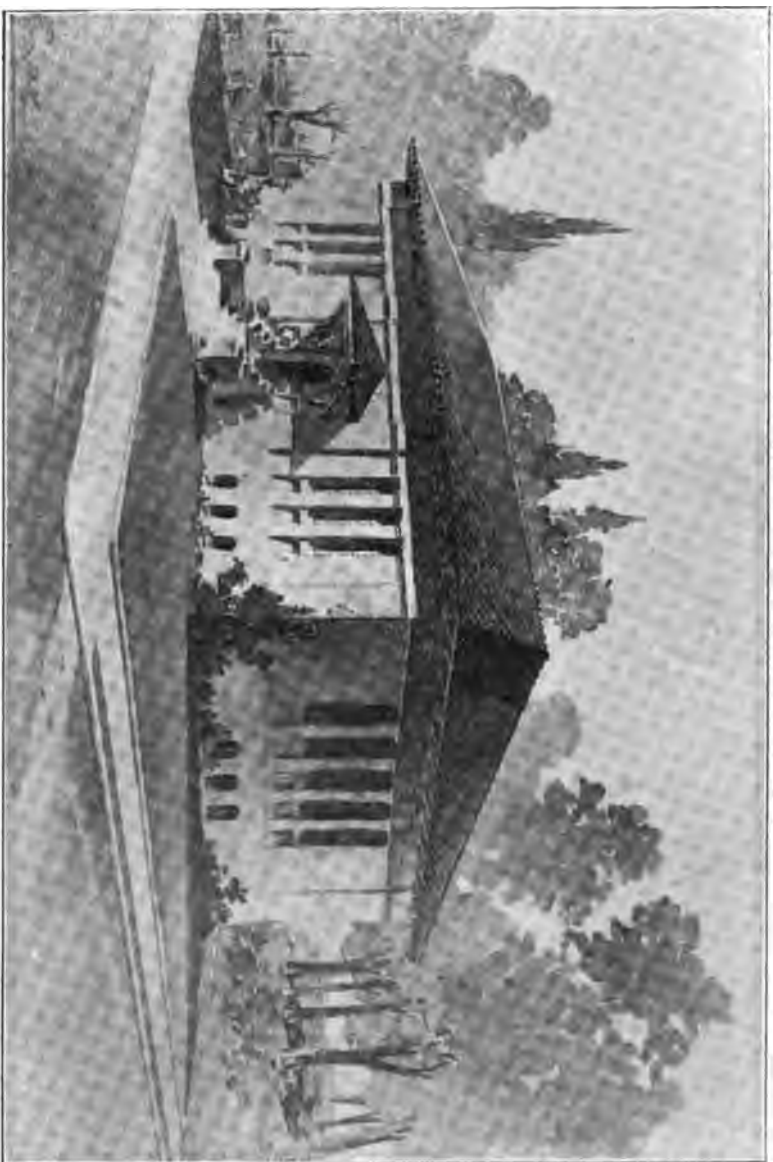
At the last report, January 1, 1903, the library contained 1,647 volumes. Owing to the inconvenient quarters in which the library is located, there has never been a reading room in connection with it, the rooms being opened two days each week for issue of books, only. Since it was made free, 850 cards have been issued.

The members of the present board of trustees are as follows: Mrs. E. M. Burke, president; Mrs. W. L. Culbertson, secretary; W. R. Lee, Mrs. L. G. Bangs, J. B. Hungerford, C. H. Hoeft, A. Kessler, J. L. Powers, C. C. Colclo. The librarian is Mrs. L. G. Bangs.

CEDAR FALLS.

Two events in Cedar Falls' history contributed largely to the present free public library; first, the formation of the Horticultural and Literary Association incorporated April 15, 1859. This society at the time included nearly all the families of the town and at one of its first meetings appointed a committee to procure a library, which committee reported June 24, 1859, a collection of fifty volumes beside the "Annals of Congress." One of the early librarians was Hon. George D. Perkins. The library prospered until nearly destroyed by fire in the Overman Block. The late Dr. S. N. Pierce took great interest in the library and for many years was its librarian. He collected the books not destroyed by fire and secured a continuance of the library until a worthy successor to this original library was formed in 1871. The articles of incorporation for this organization were filed August 4th. This library prospered until 1877 when the library trustees requested that the city vote upon the question of maintaining a free public library as provided by the laws of the State. This request pledged the city its support and its books and property accrued. The vote was carried and on May 7, 1878, the association turned over to the city 1,301 books. The city appointed as first board of directors E. Townsend, T. B. Carpenter, G. B. Van Saun, F. F. Butler and F. Sessions. Inasmuch as it would be several months before the first tax would be available, to make the library at once more useful \$300 was contributed by the board and other citizens. From 1871 the library had the advantage of a well supplied reading room and it was always patronized.

A number of citizens had for many years an ambition to secure for the city a permanent library building. Two among many are mentioned because now deceased, Hon. Edward Townsend and Hon. Peter Melendy, who had talked over plans for a suitable building. Mr. Melendy had written to members of Congress to use their influence with Mr. Andrew Carnegie and had personally written to him while mayor of the city. Through



CARROLL PUBLIC LIBRARY—CARNEGIE BUILDING.



CEDAR FALLS PUBLIC LIBRARY-CARNEGIE BUILDING.

the efforts of Hon. L. O. Robinson and Rev. Richmond Smith, President of the Library Board, a proposition was received from Mr. Carnegie to give the city \$15,000 under the usual conditions. In the matter of a location, the city was fortunate in having the tender of a gift of a site from Mrs. M. N. Dayton as a memorial to her husband, so many years prominent in the business and manufacturing interests of the city.

The Carnegie-Dayton building is now about ready for occupancy. The value of same, including grounds and books, is not less than \$25,000. There are 7,556 books belonging to the library and the reading room is supplied with twenty-nine magazines and thirteen newspapers.

The librarian's report for 1902 shows a circulation of 14,992.

The members of the present Board of Trustees are as follows: Dr. H. S. Hansen, president; D. M. Kelly, Dr. C. H. Nims, Alfred Grundy, Rev. J. E. Snowdon, Wm. C. Bryant, Mrs. W. H. McClure, Mrs. L. O. Robinson, Miss Adaline Currier. The librarian is Miss Eunice Overman.

CEDAR RAPIDS.

No active steps were taken for the formation of a Free Public Library in Cedar Rapids until the organization of the City Federation of Ladies' Literary Clubs in 1895. Some twenty-five years or more ago a subscription library was established, having as its basis a good collection of books which had formerly belonged to the Young Men's Christian Association. This subscription library struggled along for several years, and the number of volumes grew to about two thousand, but the enterprise was abandoned for want of funds, and the books were turned over to the Y. M. C. A. at the time that association was reorganized and its present building erected. About the beginning of 1890 a resolution of the Ministers' Association aroused considerable newspaper discussion of the need of a Free Public Library, but nothing came of it.

When the City Federation of Ladies' Literary Clubs was organized, January, 1895, one of its objects named in the articles of incorporation was the establishment of a Free Public Library. The members of the federation, and especially their president (who is now president of the library board), set about creating a sentiment in favor of a public library; they gave entertainments by which funds were raised to be donated to the library when established. In January, 1896, a petition was presented to the city council, signed by the members of the clubs belonging to the federation, asking that the question of establishing a city library be submitted to the voters. This petition was granted, and the question was submitted at the regular city election in March, 1896. Many ladies registered and voted, and the proposition was carried by a small majority, there being 1,105 votes for, and 1,046 votes against it, and about the first of June the library board was duly appointed by Mayor Lincoln.

In September a room in the Granby block was secured. Miss Virginia Dodge, of Oak Park, Ill., a graduate of Armour Institute Library School, was elected librarian, and Scribner's list of 1,000 volumes and their list of 300 juvenile books purchased with 1,000 catalogs of each list. The librarian arrived in November, and with one assistant commenced the work of classifying the books according to the Dewey Decimal System and making a

card catalog. This work and the construction and placing of the counters and shelves was completed January 15, 1897, and the library thrown open to the public. The open shelf plan was adopted and six years has justified its choice.

In April, 1899, Miss Dodge resigned and was succeeded by Miss Harriet L. McCrory, a graduate of Pratt Institute Library School. Early in 1900 it became evident that the library had outgrown its quarters and after carefully considering every available room the board decided to rent the Dows Auditorium. As half of this was large enough, it was partitioned off to leave an auditorium in the rear with a hallway leading to it. This new auditorium was immediately leased for church purposes, the library reserving the right to use it for lectures, teachers' meetings, exhibits, etc. As soon as the library was moved the children's department was assigned a separate room from the adults, and the work put in charge of three assistants who give their time to the study of children's literature, methods of work, etc. In the old room the combination of a reference department with a children's corner caused many uncomfortable moments for both the children and their elders. Here the doors may be closed and stories told or books read aloud without disturbing any one.

January 31, 1901, Library Day was instituted. Each year Library Day is planned to give the citizens and library workers who wish to come an opportunity to study the methods of administration of the library, and as far as possible to show how it can become affiliated with all the interests of the community. The library is on exhibition all day, a few talks on library work are given and the visiting librarians and trustees discuss problems of administration.

In order that the assistants may become familiar with library details, the librarian from the first has conducted an apprentice class.

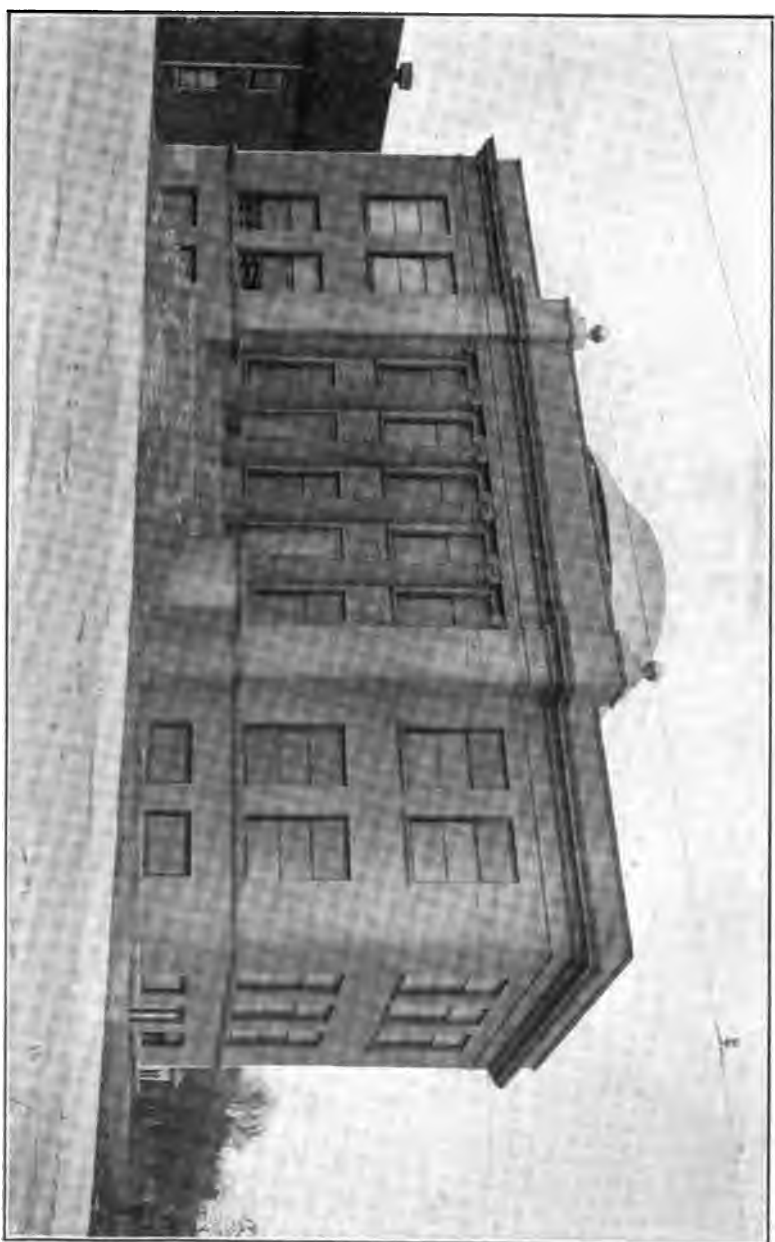
In 1901 Mr. Andrew Carnegie generously offered to give \$50,000 for a library building, provided the city would furnish a suitable site and guarantee a tax that would produce an annual income of \$5,750. Later, Mr. Carnegie increased his offer to \$75,000 on condition that the income should be \$7,500. The city council voted to accept his offer and levied the tax. The library board selected for the location of the library two lots on the corner of Third Avenue and Fifth street, the architect has been chosen and plans for a building are under way, and the Carnegie library will soon complete the quadrangle of public buildings surrounding a public park.

May 1, 1903, Miss McCrory resigned her position as librarian and will be succeeded by Miss Harriet A. Wood of the Albany (N. Y.) Library School, who will take up her duties October 1st.

The members of the present Board of Trustees are as follows: Mrs. C. D. Van Vechten, president, John Vosmek, J. M. Terry, Miss Meta Ausieker, F. F. Dawley, A. T. Cooper, J. T. Hamilton, L. W. Anderson, W. I. Endicott, secretary.

CENTERVILLE.

The nucleus of the Drake Free Public Library was given to it by the Ladies' Library and Reading Room Association of Centerville, which maintained a library and free reading room in a second story room, on the public



C. NTERVILLE PUBLIC LIBRARY—GIFT OF GEN. F. M. DRAKE.



HALLETT & RAWSON, ARCHITECTS
DES MOINES, IOWA.

square, for about eight years. Six years of the time it was presided over by the present librarian of the Drake Free Public Library, Mrs. Linna Ulrich.

In the winter of 1901, Ex-Governor F. M. Drake offered to erect a library building for Centerville, his home town, and furnish a suitable site therefor, on condition that the citizens vote to maintain it by tax as a free library under the provisions of the State law. This proposition was received with enthusiasm and appreciation by the citizens of Centerville, as indicated by the large vote in its favor.

On January 15, 1903, the building was formally presented to the city by General Drake, the occasion being observed with appropriate ceremonies, the principal addresses being made by Governor Albert B. Cummins and Miss Alice S. Tyler, Secretary of the Iowa Library Commission. A large attendance of the faculty and students of Drake University, Des Moines, added to the interest of the occasion, and the large attendance made it necessary to give the program in two places simultaneously, at the opera house and Presbyterian church.

The site and building complete, cost about \$35,000; the building is located near the center of the city, and is built of granite pressed brick, with terra cotta trimmings, and consists of two stories and a basement. The book room has a capacity of 20,000 volumes, the present number now in the library, being nearly 5,000 volumes. F. C. Eastman of Des Moines, was the architect. The library has recently been classified and cataloged.

The Board of Trustees of the Drake Free Public Library are as follows: E. C. Haynes, Mrs. O. H. Law, Dr. J. L. Sawyers, Mrs. C. W. Lewis, Rev. G. M. Adams, Mrs. Jas. Shirey, J. A. Bradley, Mrs. A. J. Baker, K. E. Little.

CENTRAL CITY.

April 27, 1893, Mr. J. C. Clegg of New York City, visited Central City to look after some land he owned adjacent to the town, and noting that there was no library or reading room, he proposed to establish one, and promised on returning home to make a contribution of books, which he did, sending three hundred volumes, afterwards adding two hundred more.

A case for the books was procured, and announcement was made to the public that the books were to be found in the printing office.

June 25, 1895, the library was regularly incorporated under the laws of the State, with board of directors. Space was then obtained in a store and later in the postoffice. Six years ago, a tax was levied, to pay running expenses; a librarian was engaged and a room rented on Main street. Three years ago the Young[People's Church societies proposed to establish a reading table and pay one half the expenses of the library. To raise the money, they have given a lecture course each year.

For years Mr. Clegg gave the library one half the rent from eighty acres of land, and at the time of his death, bequeathed half the proceeds of the sale of the farm to be used for a library building.

The library has 1600[volumes of which 100 volumes were given by J. C. Davis, fifty volumes by Rev. Palmer Letts, and others who are interested have also contributed.

The members of the present board of trustees are as follows: C. H. Clark, president; Mary Crane Hatch, secretary; J. C. Davis, H. G. Porter, E. K. Hatch, J. B. Pherrin, Geo. Lary, Miss Alston, Mrs. John Trueblood. The librarian is Mrs. Howard Bliss.

CHARITON.

A free public library for Chariton had been under discussion for some time and formal steps were taken to establish it at the annual reception given by the History Club to other federated clubs of the town, January 1, 1898. Activities were begun at once to federate all the clubs and societies of the town for this purpose. A complete federation of twenty-four organizations was soon formed, a suitable place was procured in an upper room on the public square and on the first of November, 1898, the Free Public Library of about eight hundred volumes, contributed by the Lucas County Library Association and Chariton Library and Reading Room Association, with a well supplied reading room, was opened to the people of Chariton and the vicinity with \$198 pledged toward immediate support.

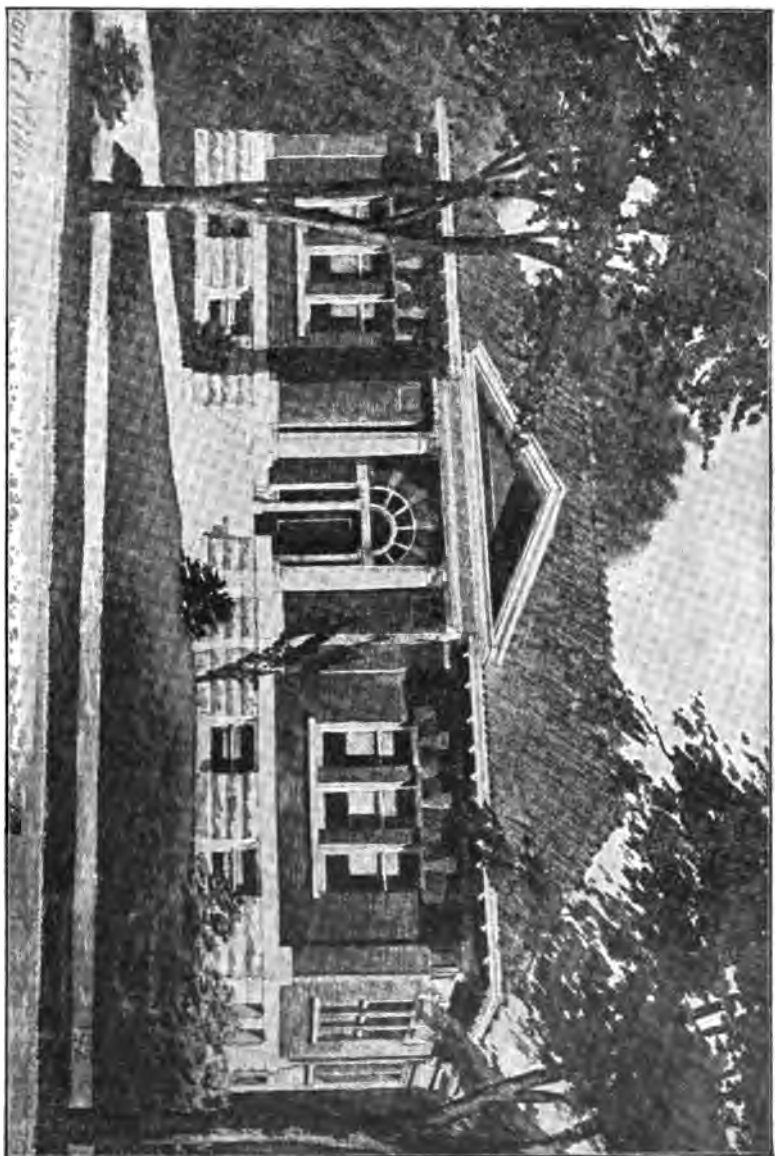
This movement at once met with a hearty endorsement by the public and at the municipal election in the following year by a large majority it was voted to establish and maintain a Free Public Library under the library law of Iowa. Miss Margaret W. Brown, Miss Ethel Bartholomew, Miss Margaret McCormick, F. R. Crocker, T. M. Stuart, Mrs. Victoria Dewey, Mrs. J. O. Cripps, Reverend Whitten and Thomas Gay were appointed by the Mayor as trustees. Miss Bartholomew and Mr. Whitten having since removed from the city, their places have been supplied by Mrs. Laura R. Gibbon and Dr. F. H. Boynton, and these, with seven of the original appointees, constitute the present board of trustees. To the working force has been added Miss Estella Cook as Assistant Librarian.

There were turned over to the library from independent organizations 896 volumes of a probable value of \$500 and the full annual report at the close of 1899 shows there were in use 975 volumes with other property valued at \$100.

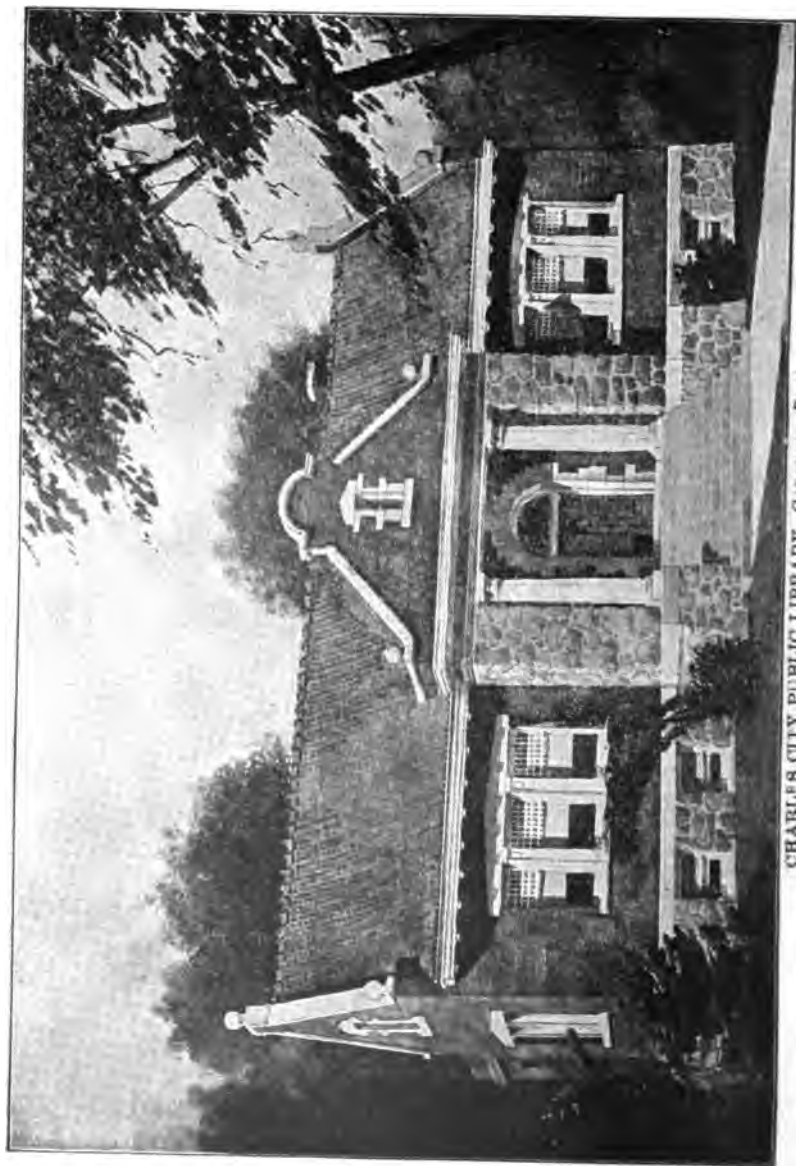
For this nucleus of a library the city is indebted to the public spirit of the federated clubs and the active interest of a number of our citizens who have contributed money, books and other property. It is with satisfaction that we can truly say that the movement so generously begun by clubs and individuals five years ago sees no abatement of interest and that the people recognize most fully the continued intellectual, and what is still more marked, the moral force of this institution.

After organization under the State law the clubs and individuals continued to support the library until the tax was available in the early part of 1900. Since that time one and one-half mills, bringing an annual income of about seven hundred dollars, has been levied which was increased to two mills for the coming year.

In the reference department, the bound volumes of many of the standard magazines are now upon the shelves and others are being added as rapidly as means will allow. With Poole's Abridged Index as a guide, this department is already an attractive place for the studious. The Free Traveling Library of the Iowa Library Commission has been of great service in aug-



CHARITON PUBLIC LIBRARY—CAMPAKILE BUILDING.



CHARLES CITY PUBLIC LIBRARY-CARROLL BUILDING.

menting the collection of books and for circulation in the rural districts. The lack of room which has been the most serious drawback for some time is to be supplied through the generosity of Mr. Carnegie who offered the city in January, 1903, \$10,000 upon the usual conditions. These conditions were promptly accepted, and an excellent and convenient lot has been purchased, Patton & Miller have been employed as architects and the contract for a building will soon be let.

CHARLES CITY.

On March 1, 1878, an informal meeting of several ladies and gentlemen of Charles City was held, when a committee was appointed to draft a constitution for the organization and control of a public reading room and library. This committee made their report March 6th, and presented a constitution, which was adopted, and completed the organization known as the Charles City Reading Room and Library Association.

An appeal for money, books, papers, etc., was met with liberal contributions. The organization was continued with increasing prosperity until May 22, 1886, when the library and all of its assets were transferred to the government of Charles City; the city having voted a tax for its support. The invoice of the library property, transferred to the city at that time, showed a valuation of \$1,014 60. Since then the library has met with remarkable prosperity. The present number of books is 3,000, besides a large number of periodicals, magazines, papers, etc.

The donation recently made by Mr. Carnegie for the Charles City Free Public Library building is \$12,500, and a site for the new building has been purchased by private subscription at a cost of \$4,000. The ground is 132 feet fronting the public park, and eighty-three feet deep. Patton & Miller of Chicago have been selected as architects, plans have been approved and it is expected that the building will be completed during the summer of 1904.

The members of the present board of trustees are as follows: John G. Legel, president; H. V. Fussel, George E. May, W. D. Lindaman, Mrs. R. J. Lackey, Mrs. Joseph Hecht, Mrs. A. O. Ruste, Mrs. B. W. Jones, Mrs. A. E. Ellis.

The librarian is Miss Katherine L. Ellis.

CHEROKEE.

The history of the library movement in Cherokee begins with the organization of the Ladies' Library Association, October 19, 1886. The purpose of this association was to create a library sentiment and establish a library which should at some future time form the nucleus of a free public library for the city. There were twelve charter members of this association, the membership fee being \$5. The membership never became large. Fifty books were donated, \$120 was spent for new books and the library opened in the rooms of the Y. M. C. A., they giving the use of their rooms two afternoons in each week. The Y. M. C. A. soon disbanded, a room had to be rented and the sum of \$1 per year charged to readers, not members of the association, barely paid the rent. All money for the purchase of new books

was raised by giving entertainments of various kinds. These were not always a financial success. Much credit is due the first president, Mrs. C. K. Butler, whose zeal and untiring energy gave impetus to the work.

After struggling with the problem for twelve years, an appeal was made to the city council, and the question of a tax-supported library was submitted to a vote of the people in the spring of 1898. The question carried, and in October following, the books and furniture belonging to the Ladies' Library Association were tendered to the city on certain conditions and accepted. December 31, 1898, the Public Library was formally opened with 1,641 volumes transferred from the L. L. A. The trustees are all women, and with few exceptions they have been identified with the library work from the beginning. The trustees act as librarians and attend to all the work of the library without remuneration.

The annual report for the year ending December 31, 1902, shows 3,418 volumes in the library, with a circulation of 10,655 and 922 readers' cards in force.

The members of the present board of trustees are: Mrs. J. H. Burlingame, Mrs. C. Nicholson, Mrs. M. Wakefield, Mrs. N. T. Burroughs, Mrs. O. C. Ford, Mrs. Geo. Green, Mrs. E. C. Herrick, Mrs. W. A. Sanford and Mrs. F. J. Stanoskeck.

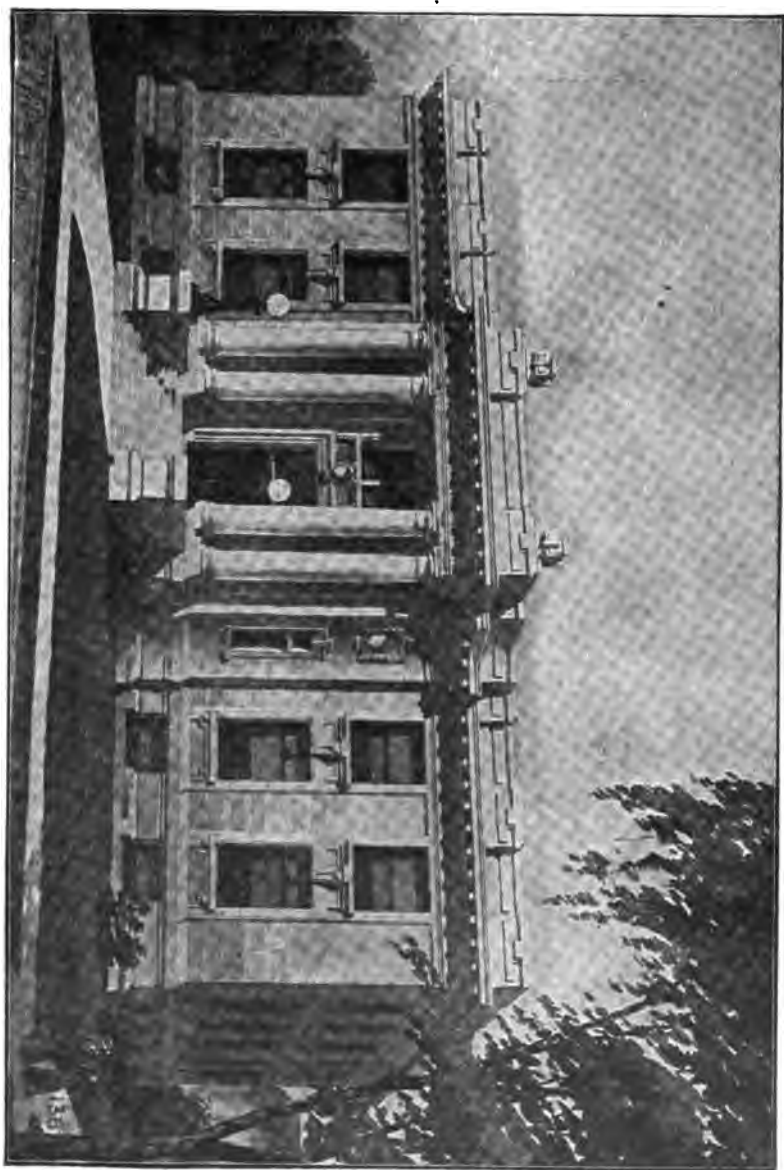
CLINTON.

In the fall of 1901, the welcome announcement was made to the people of Clinton, that Mr. Andrew Carnegie was willing to erect a library building for that city, costing \$30,000 on the usual conditions. Inasmuch as no public library existed in Clinton, it was necessary to at once submit the questions of establishing and maintaining a free public library, as provided by the State law, to a vote of the people. At the regular city election in March, 1902, the vote was favorable to such establishment and the city council accepted the offer of a building from Mr. Carnegie. Soon, thereafter, it being seen that the income provided under the State law, would furnish adequate support for a more expensive building on the ten per cent basis required of Mr. Carnegie, an increase in the amount of his gift was requested and Mr. Carnegie responded by increasing the gift to \$45,000.

Patton & Miller of Chicago were selected as architects, and plans have been accepted for a stone building, comprising two stories and a basement, and the work of construction is progressing rapidly. A beautiful corner lot for the building, well situated, was given by Mrs. Emma Lamb Young.

The Clinton public school library, comprising about six thousand volumes, will be turned over to the new institution as a nucleus, and it is expected that within one year the new library will be open to the public.

The board of trustees consists of the following: Hon. George D. McDaid, president; George B. Phelps, secretary; Mrs. W. I. Hayes, Virtus Lund, Sr., Theo. Carstensen, Petrel Davis, Rev. E. H. McLaughlin, E. E. Hecker.



CLINTON PUBLIC LIBRARY—CARNEGIE BUILDING.



CORNING PUBLIC LIBRARY—GIFT OF MRS. MARY A. RAWSON.

COLFAX.

The Colfax Public Library sprang into existence as naturally as did her famous mineral waters, which the miner's drill made possible of escape.

A reading club for the study of American literature was organized in 1892, and the demand for reference material drained all the private libraries of the town. This proved the lack of American literature in the town, and the need of a public library.

Under this incentive, Miss Fannie Wilson and Dr. Alice Turner, two members of the club, pledged themselves to improve the first opportunity to establish a library. Accordingly on the 4th of October they procured the services of a concert company which was unexpectedly detained at Colfax, and secured net proceeds of \$10 from the entertainment.

With this nucleus, the committee visited the city council, which was erecting a city hall, and by promising to increase the amount to \$500, secured a room for the enterprise.

A mass meeting was held, and on December 16th a complete organization of the Colfax Public Library Association was effected and July 21, 1893, the library was opened.

The committee succeeded in procuring \$501.64. One hundred and seventy books were purchased, and also library furnishings; 422 books were donated, and the library was opened with 597 volumes. In March, 1893, a vote to maintain the library by tax levy was taken at the municipal election, but was defeated by nineteen votes. It was conducted as a subscription library until April, 1902, and the services of the librarian were donated most of the time. On March 25, 1901, the question was again voted upon and carried. November 8, 1901, the library was made the property of the city.

There are 961 volumes in the library, and it is well patronized and highly appreciated. The Free Traveling Library has been used to advantage in augmenting the collection of books.

The members of the present board of trustees are as follows: Dr. Alice B. S. Turner, president; C. W. Crisman, Mrs. E. J. Hawk, M. B. Wheelock, J. R. Sharp, Mrs. Jessie Marquis, Mrs. Mary E. Thomas, Mrs. Emma Keip and Mr. W. L. Bates.

Miss Floretta Ogan, librarian.

CORNING.

The Corning Public Library came into existence in 1897. The year before an old subscription library, consisting of about five hundred books, had been given to the women's clubs of the town to be used as a nucleus for a free library. These books were nearly ready for circulation when a disastrous fire occurred, and nearly every volume was burned. Representatives of the city federation of women's clubs went at once to work to build up a new library upon a somewhat different plan. The Y. M. C. A. gave the use of a room and in a short time about two hundred books had been purchased by money secured from entertainments and from private contributions. It was possible to open the library but once a week at that time as all the work in connection with it was voluntary and unpaid. In a short time the number of volumes was doubled, and the number of readers was

large enough from the beginning to convince the most skeptical that a public library could be established without a building and many hundreds of books.

After the first year an unused room in the court house was secured. The library still being dependent upon unpaid service for its management and upon private contributions for its support, the State Traveling Library was an important aid during these first years. The opportunity to supplement in this manner the limited number of books upon the shelves, by fifty fresh ones every three months, without cost except for transportation, was very much appreciated.

Soon after the organization of the library a proposition to levy a municipal library tax was submitted to the voters of Corning, but the possibilities of the library had not then been demonstrated and the vote was not at that time favorable. In the spring of 1899 the question of a tax was again submitted to the people, and was voted by a very large majority. A two-mill levy was set aside for library purposes, a board of trustees appointed, and the library then in existence formally given to the town.

In 1900 through the generosity of Dr. A. A. Rawson (deceased) and his wife, Mary A. Rawson, a lot and substantial brick building were given to the town for a library together with five hundred valuable books from Dr. Rawson's private library. Other generous gifts have been received. Among them a collection of fifty expensive reference books, presented by Mr. and Mrs. F. C. LaRue in memory of Amelia Chapin LaRue.

In addition to its circulating department, the Corning library maintains a reading room and well equipped reference room. There are now nearly 3,000 volumes and the circulation for 1902 was over 10,000. The annual income is about \$600.

Although no longer dependent upon private contributions for support, much personal service is still given the library by those interested, and it has already become a most important factor in the life of the community.

The members of the present board of trustees are as follows: Mrs. H. M. Towner, president; E. F. Miner, secretary; Mrs. C. H. Bryant, Mrs. A. B. Turner, Mrs. F. L. LaRue, Mrs. Mary A. Rawson, Mrs. Lucina R. Wells, Mrs. C. E. Okey, Paul S. Junkin. The librarian is Mrs. C. H. Bryant.

COUNCIL BLUFFS.

The Free Public Library has developed into its present form through various organizations.

The first effort to form a library in Council Bluffs was made in March, 1866, by an organization called the Young Men's Library Association, with D. C. Bloomer as chairman. Several hundred books were collected and the library placed in the Empire block, which, with all its contents, was destroyed by fire in June, 1867. Two years later (1869), Professor Armstrong, superintendent of the high school, feeling the need of books to aid the pupils in the literary department of the school, organized, with the help of Horace Everett, the High School Library Association. It was again incorporated in 1871, as the Public School Library, and in 1873, through the efforts of A. W. Street, an active member of the Young Men's Christian Association, a combination was formed between that body and the Public School Library,

by which the latter had the use of a room in the Woodbury building, free of rent, and W. T. Robinson of the Young Men's Christian Association, gave his services as librarian. This arrangement continued for five years, but as few new books were added and the old ones wearing out, the library was in a fair way to die a natural death. In 1878 the Council Bluffs Library Association was formed, and as there was some difficulty in collecting money, the directors determined to call the women of the city to their aid, and at the following election of directors seven women and two men were appointed. There were 1,900 volumes accessioned, but not more than 1,400 volumes could be found. The city council allowed \$15 a month for rent, and Mr. Everett gave the use of a room, so that the money allowed might be used for the purchase of books. The women enlarged the subscription list, collected money by various entertainments, increased the number of books and made the reading room an attractive place. In 1875 an effort had been made to levy a tax, but it was a failure. Six years later the women decided to petition the council to submit the proposition to a public vote, and after some opposition, carried the election by a large majority in favor of a free library, and in August, 1881, the first tax was levied. All difficulties being removed and success assured, the women, after three years of active service turned the library over to the city.

April 24, 1882, it was opened as a free public library, with between two and three thousand books on the shelves. It has outgrown its quarters twice, and the last time, in 1889, it was moved to the Merriam block, from whence it will be moved into a library building suitable for its increasing needs and creditable to the city in which it is placed, through the generosity of Mr. Andrew Carnegie, who has presented the city with \$70,000 for that purpose.

The members of the present board of trustees are as follows: T. E. Casady, E. A. Troutman, W. S. Baird, M. F. Rohrer, W. I. Smith, Patrick Smyth, Mrs. Mary L. Everett, C. R. Tyler, Finley Burke.

Mrs. Mary E. Dailey is librarian.

DAVENPORT.

Since 1867 Davenport has had a subscription library known as the Davenport Library Association, which has done what it could to meet the needs of the community, but in 1899, feeling the imperative need of becoming more broadly useful, an appeal was made through Miss Alice French (Octave Thanet), a resident of Davenport, to Mr. Carnegie. His reply was an offer, not to help the association, but to pay for a library building costing \$50,000, provided the municipality would purchase a suitable site and agree to maintain a library at a cost of \$4,000 per year.

This offer was presented to the city council January 3, 1900, and was unanimously accepted. The question of establishing and maintaining a library was submitted to the voters April 7th of that year and carried by a large majority.

A board of trustees was then appointed by Mayor Heinz, as follows: Rev. James P. Ryan, Rev. Arthur M. Judy, Judge C. M. Waterman, Mr. S. F. Smith, Mr. George Wolters, Mr. Charles Beiderbecke, Mr. Edward Kauffman, Mrs. J. J. Richardson, Mrs. J. P. Van Patten, from which

Mr. S. F. Smith was elected president; Mr. Edward Kauffman, vice president; Rev. A. M. Judy, secretary. Mrs. Van Patten has since withdrawn and Mr. Beiderbecke having died, those vacancies have been filled by the appointment, by Mayor Becker, of Dr. A. L. Hageboeck, and Mr. Robert Schmidt.

A site was selected by the board near the business center of the city and purchased for \$19,200, a part of which was generously voted by the city council from the general funds, as the tax was not sufficient to cover it. Competitive plans for a building were then called for, notices were published in the architectural journals and daily papers, and a circular sent to all desiring to compete. In response to the invitation seventy-one plans were submitted, and from these plans the board learned that at present prices of materials a building could not be erected for \$50,000 which would meet the growing needs of the city. Application was therefore made to Mr. Carnegie through Judge John F. Dillon of New York, a former resident of Davenport, who presented letters written by Mr. B. F. Tillinghast, editor of the Davenport *Democrat*, in which the situation was clearly stated, and the reply to which was an additional gift of \$25,000, the city tax to be increased to form an annual income of \$7,500.

The plan submitted by Mr. Calvin Kiessling of Boston was then adopted with some slight modifications and the bid of \$67,799 of the Northern Building Company accepted. Many delays occurred in the construction and finally all work was suspended for five months, owing to the failure of the company holding the contract. During this time bids were called for to complete the building, and as the lowest one was \$10,000 in excess of the original bid, the guarantee company will be held liable by the city for its loss. Work was resumed in June and there is every prospect that the building will be turned over to the board not later than March 1st.

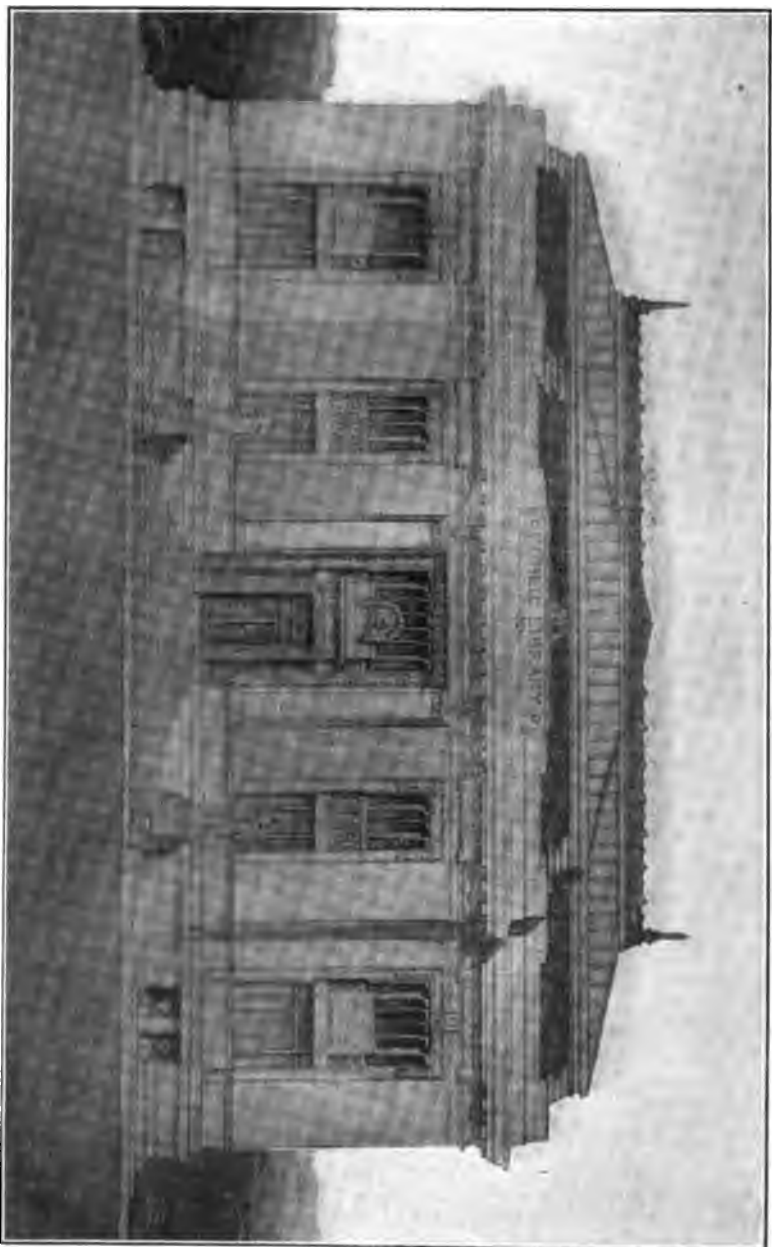
Miss Marilla W. Freeman, librarian at Michigan City, Indiana, was called to take charge, and since last October has accomplished a vast amount of work under such difficulties as this brief history will readily suggest. A room in the City Hall was occupied by her and her assistants until June 3d, when, arrangements having been made with the old Library Association to purchase their 7,000 volumes and rent their rooms, the library was opened in these temporary quarters with about 12,000 volumes. The circulation is already gratifyingly large and every effort is being made to serve the public as efficiently as the conditions allow.

On account of its historic location in the Mississippi Valley, the Davenport Library will aim to gather together, in addition to a well-rounded collection, an especially strong department of American history.

DENISON.

The question of the establishment of a Free Public Library in Denison was voted upon in 1901 and in 1902 Mr. Carnegie offered \$10,000 for a library building. This building is now in process of erection, E. P. Schoentgen of Council Bluffs being employed as architect.

The accumulation from the annual tax levy will be used for the purchase of books and the books from the public school library will be placed on the shelves during vacation.



DAVENPORT PUBLIC LIBRARY—CARNEGIE BUILDING.



DES MOINES PUBLIC LIBRARY.

The members of the present board of trustees are as follows: W. A. McHenry, president; H. H. Savage, secretary; J. B. Romans, P. E. C. Lally, Hon. J. P. Connor, R. Lechfeldt, C. F. Kuehnle, Charles Tabor and B. Broderson.

DES MOINES.

The foundation of the present public library of Des Moines was laid in the year 1866. A paper setting forth the plans and purposes of the proposed library movement was prepared by Colonel Gordon A. Stewart, and this was circulated for the purpose of obtaining signatures. The first signature was that of the late Hon. C. H. Gatch, who in more recent years was president of the library's board of trustees, having held that office from 1891 until his death, in 1897. The next was that of the late Hiram Y. Smith, then a young lawyer of the city, and following his came that of Colonel Stewart. One hundred and thirty-one additional names were afterward secured, and a beginning was made.

A general meeting was called for the evening of December 13th, to be held in the basement of the Methodist church, which then stood on Fifth street, between Walnut and Court avenue. The *Iowa State Register* took an active interest in the movement and urged people to attend the meeting. The meeting was held according to call and was largely attended. At an adjourned meeting held December 17th articles of incorporation were adopted, the new body was named the "Des Moines Library Association," and provision was made that the organization should date from December 17th, 1866. A month later, on January 16, 1867, the articles of incorporation were filed for record.

Some time in August, 1867, Mr. C. A. Dudley was appointed librarian, and in September the library was opened to the public, with about two thousand three hundred books on its shelves. Mr. Dudley held the position of librarian but one year, resigning in August, 1868.

The association struggled along for several years, securing an uncertain income from the sale of membership tickets, the giving of entertainments and lecture courses, and occasional private subscriptions. At the annual meeting in May, 1878, the board of directors decided to apply to the city council for an appropriation in support of the library, and as a result of this application five hundred dollars for the use of the library was voted from the city fund at a council meeting in the same month, this amount to be paid annually.

For more than five years, beginning in May, 1876, the library was under the charge of a number of public-spirited women of the city, who undertook to place the enterprise upon a substantial foundation. Even with the help from the city, however, the financial problem proved too difficult of answer, and when the time came for the annual meeting of May, 1882, the stockholders assembled and passed a resolution, That the Des Moines Library Association turn over to the city of Des Moines, for the purpose of maintaining a free library, all its books and other property in trust, upon the condition that the city maintain a free library.

In August of the same year the city council, by ordinance, accepted the trust, and provided for the establishment, maintenance and management of a city library. In October the association held a final meeting, confirming

the proposition previously made to transfer the library to the care of the city. In this way the present city library was evolved from the association formed in 1866.

At the time the library was made free it had 3,192 books. It now has 26,805 miscellaneous volumes and 5,134 public documents, a total of 31,939.

The ordinance framed by the city council providing for the management of the library stipulated that it should be under the supervision of a board of five trustees. The library worked under the board so constituted until the new library law of 1894 was passed, which provided for a board of nine members, to be appointed by the mayor of the city.

The members of the board of trustees are as follows: Dr. W. N. Heaton, president; Mr. Lafayette Higgins, secretary; Mr. G. D. Ellyson, Mrs. Samuel Green, Mr. W. C. Harbach, Mr. George F. Henry, Mrs. W. F. Mitchell, Mrs. W. L. Read, Mr. D. F. Witter.

The library association had several different librarians during its lifetime; most of them serving but a short time. One of these was Mrs. Ada North, who previously had been state librarian for several years. Mrs. North had charge of the association library from October, 1878, to August, 1879, when she resigned to become librarian of the State university. Mrs. North was succeeded by Mrs. W. T. Dart. Mrs. Dart continued to hold this position for five years after the library was transferred to the city, resigning in November, 1887, the vacancy being filled by the election of Miss Stella Bebout (now Mrs. A. B. Morse). In July, 1891, Mrs. Morse resigned, and the place left vacant by her resignation was filled by the appointment of Miss Ella McLoney, the present librarian.

The library has had several temporary homes during the years of its existence. It was opened in 1867 in rooms now occupied by the *Register and Leader*. In 1876 it was transferred to the Youngerman building, on Fourth near Court avenue. In 1890 it was again removed, this time to rooms on the first floor of the Young Men's Christian Association building, on Fourth street and Grand avenue. It remained in this place until October, 1895, when it was again changed, going to Eighth and Locust streets, where it remained until a short time ago. It is now installed in a new home of its own, a spacious stone building on First and Locust streets.

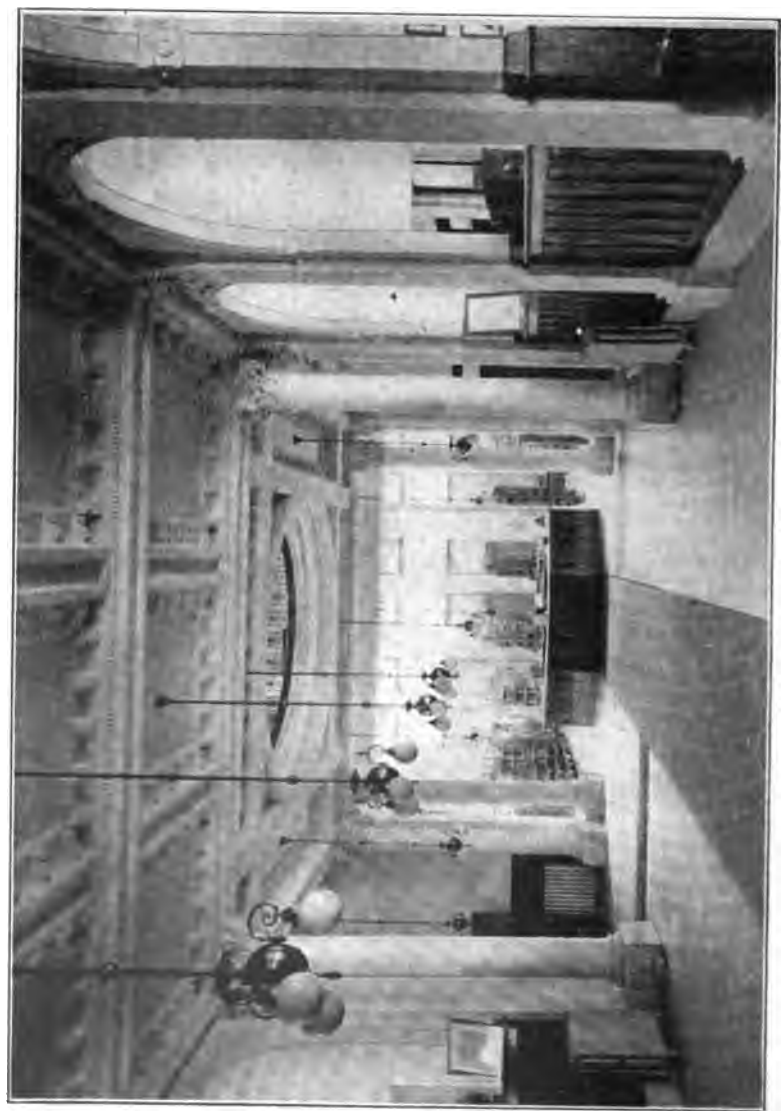
DUBUQUE.

Over forty years ago was laid the foundation of what is now the Dubuque Public Library. The beginning was small and carried on entirely by volunteer aid. After passing through various stages the library at last became a well arranged subscription library under the control of an organization called the Young Men's Library Association. The revenue of this organization came in part from membership fees and entertainments but mainly from generous subscriptions given by citizens of the town. It was through this kind and active interest that the association was enabled to purchase many works of permanent value and to procure a well rounded collection of about fourteen thousand volumes.

But after some years the association began to feel that the library should be such that, all the citizens of the city might enjoy its privileges. Therefore in the year 1900, the president of the Young Men's Library Association,



DUBOQUE PUBLIC LIBRARY—CARNEGIE-SPOUT BUILDING.



DUBUQUE PUBLIC LIBRARY—DELIVERY ROOM AND CORRIDOR.

the Hon. Jacob Rich, and Senator Allison decided to lay the matter before that friend of public libraries, Hon. Andrew Carnegie. After consideration Mr. Carnegie offered the city \$50,000 for a library building provided the city would promise to fulfill certain conditions as to future support. Later Mr. Carnegie increased his gift by an additional \$10,000. The Young Men's Library Association then came forward offering to give the city all its property, consisting of some fourteen thousand volumes together with real estate valued at about \$10,000.00. The subject was brought before the city and received a formal vote at the municipal election. The result of the vote was most gratifying, and showed the public spirit of the town. The question was how to obtain a suitable site for the new library building. And here one of Dubuque's most generous men, Mr. Frank D. Stout came forward with the offer of the lots, on which the library now stands.

After the plans had been chosen, work on the building was pushed forward rapidly and in the fall of 1902 it was practically completed and ready for use. In October the mayor and city council inspected the building and formally received it on behalf of the city. The two days following, the library was thrown open to the public and then its regular work began. Miss Bessie Sargeant Smith, a graduate of New York State Library School, and formerly librarian of the Harlem Public Library, New York City, had been elected librarian, assuming her duties July 1, 1902, supervising the removal and installation of the library in its new home.

That there was need and desire for a public library the patronage of the first nine months has demonstrated. The number of books drawn by both adults and children exceeded all expectations. Besides so many children have come to the library to read, that frequently the room has been taxed to its utmost capacity. The use of the general reading room has also steadily increased. All these signs show that the experimental stage has been passed.

The auditorium has been used for various meetings of an educational character, the most notable of these being the University Extension lectures. This course was given under the auspices of one of the women's clubs of the city. The county Medical Association also hold its meetings in the auditorium.

The use of the library by the teachers and pupils of all the schools has been gratifying; at different times teachers have held classes in the students' rooms. Here the librarian has brought together all available material on the subjects chosen by the teachers. The work done in this way has been enjoyed by both teachers and pupils. An exhibit of the drawing work of the public schools of the State was held in the library. This exhibit was hung in the library building at the request of the supervisor of drawing in the city schools through whose efforts the exhibit was brought to the city.

A collection of original drawings for illustrations for the publications of Charles Scribner's Sons was held in the library, proving of great interest and value to all who saw it.

Some work has been done in connection with the women's clubs of the city. Certain shelves in the reference rooms have been set aside for the use of several classes in the clubs. On these shelves are placed such books as the leader of the class may desire. Moreover the interest of the club women has been manifested in a very substantial and acceptable manner. In the

early spring the educational division of the Dubuque Women's Club held in the library auditorium its annual open day. This year the day was called "Library Day," and was entirely given up to library affairs with addresses on the relation of the library to the children and their homes. At the close of the meeting the president of the division presented to the children's room of the library a large and beautiful reproduction in plaster of Verocchio's "David."

Many other gifts have been received from friends, the "Winged Victory of Samothrace," a good collection of minerals found in this vicinity, a number of books, a very large number of valuable unbound magazines, all the framed pictures belonging to the Art Association of the city, etc.; also from a most generous and ever ready helper and friend, the entire furnishings for the art room of the library, a beautiful Austrian urn and pedestal and very many pictures; and from the citizens of Dubuque, over \$12,000 for furnishing and completing the building, besides \$10,000 from the Young Men's Library Association. All these are evidences that the library has found friends in the city, and that as time goes on we may hope for better and more widespread work.

The members of the present board of trustees are as follows: Jacob Rich, president; J. R. Lindsay, secretary; D. J. Lenehan, B. W. Lacy, Mrs. J. S. Lewis, O. P. Shiras, Peter Klauer, Peter Kiene, J. E. Welsh.

EAGLE GROVE.

The first attempt at a library was made about 1885 or '86 and a small collection of books was purchased by subscription, and installed in the post office building which is now the office of Sherman & Andrews. This collection soon dissolved by operation of natural laws. Later, the women of Eagle Grove made a considerable collection of books for library purposes, which was kept over Packman's store, and later in Dr. McGrath's office, and was extensively used. This collection now forms a part of the Pythian library.

In 1901 a Des Moines insurance and investment company offered to place a library of books here if they could sell a certain amount of bonds. Enough of the bonds were sold so that we secured 250 volumes, which on January 18, 1902, were installed in the Masonic reception room as the first genuinely free public library of Eagle Grove. From that location they were soon moved to the room across the hall in the Masonic building, where they remained until the completion of our library, the Traveling Library, of the Iowa Library Commission, being used to augment the collection of books. Mrs. Belle Y. Miller has been librarian, since the beginning, and by her devotion to this work has made its continuance possible.

The next step after getting this little collection in place and in public use, was to secure a home for it. On Tuesday evening, February 18, 1902, about one hundred business men assembled at a banquet in the opera house, for the special purpose of contriving things for public good. That night, in connection with other public matters, the library project was brought up; an appeal made for help, and about \$800 was subscribed at once for forwarding it. But there was not enough money in sight at that time for a building, and hardly enough to purchase a lot.



EAGLE GROVE PUBLIC LIBRARY-CANNEGIE BUILDING.



ELDORA PUBLIC LIBRARY—CARNEGIE BUILDING.

Application was made to the city council at its meeting early in February, to submit to the people the question of establishing and maintaining a free public library. Every member was in favor of it, and upon proper resolution was duly submitted at the March municipal election, and carried by a large majority.

In the meantime some effort had already been made to interest Mr. Carnegie in the project, and after the election and in April 1902, a formal application was made to him for a donation, backed by the influence of Colonel Henderson, then Speaker of the House of Representatives, who assisted in every way possible, not only to secure the donation from Mr. Carnegie, but by sending books of interest and value to fill the shelves. With his assistance, the matter was brought to Mr. Carnegie's attention, and on April 26, 1902, we were informed that ten thousand dollars had been set aside and donated for the erection of the building, upon the usual terms of support and furnishing a proper site.

On July 1, 1902, the mayor, acting under the statutes, appointed a board of library trustees, consisting of the following persons: Mr. John R. Smith, afterwards chosen as its president, Mr. J. H. Howell, Mr. A. H. Barnes, Mrs. C. H. Morse, Mr. T. O. Douglass, Mrs. R. W. Hayes, Mrs. B. Y. Miller, Mrs. E. D. Mineah, and Eugene Schaffter. Afterwards by the resignation of Mrs. Miller, Mrs. Hayes, and Mr. Douglass, their places were filled by the appointment of Mrs. O. A. Young, Mrs. C. E. Hanson, and Mr. Geo. Carlton.

The Library Board immediately took up the work of having plans made for the building to be erected with Mr. Carnegie's donation. Messrs. Smith & Gage, of Des Moines, were chosen as architects, and the building will be opened within a few months.

EDDYVILLE.

The public library at Eddyville had its beginning in a library association in 1886; and in 1895 became a free public library supported by municipal tax and now numbers over twelve hundred volumes.

The members of the present board of trustees are as follows: Mrs. Louise Epperson, president; O. H. Seifert, secretary; Mrs. A. M. Lafferty, Mrs. F. W. Fais, Mrs. F. M. Crea, Miss Sue Vance, Miss Minita Harper. Librarian, Mrs. Georgia Boyd.

ELDORA.

In the seventies the open saloon was a well-known feature of most Iowa town and Eldora was no exception, having three such places.

The Good Templars Lodge recognizing a need of a different atmosphere agitated the subject of a public library and reading room, resulting in the donation of a small collection of books by interested citizens.

In December 1878 a public library was established. It was supported by subscriptions and donations from citizens. In 1888 the trustees proposed to the city council that the city take charge of the library, which by this time had become an institution of acknowledged influence in the city. This prop-

osition was accepted and since that time the library has been supported by a tax. Although the library was tax supported it was not a free library until 1899 when by action of the trustees it was made free to all citizens of the city of Eldora.

For the first three years of its existence the library remained in the Good Templar's hall. In 1881 it was moved to a more central location, in a building formerly used as a schoolhouse which was donated to the town, a temporary site being donated by two citizens.

In 1890 a Young Men's Christian Association was established and a brick block built, the lower floor of which was leased to the library for library purposes for a term of ninety-nine years. The Traveling Library of the Iowa Library Commission has been used since May 1897 not only to augment the regular collection of books, but to supplement material provided for special subjects of club and individual study.

January 1, 1902, an offer was received from Mr. Carnegie of \$10,000 for a library building under his usual conditions, of a site and of 10 per cent maintenance tax. Up to this time the question of establishing a free library had never been brought before the people, so in March 1902 the question was submitted to the popular vote at a special election and carried unanimously.

Patton & Miller of Chicago, were chosen as architects of the new building and May 11, 1903, the library was completed and dedicated by Gov. A. B. Cummins.

After the establishment of the Library Commission, Miss Alice S. Tyler, Secretary of the Commission, at the request of the trustees, came to Eldora and began the reorganization of the Library, an organizer being employed later to complete the catalog.

The librarian attended the summer school for library training under the auspices of the Iowa Library Commission.

The Library now contains 2,500 volumes.

The present members of the board of trustees are as follows:

E. H. Lundy, president; H. A. Huff, Miss Fanny Duren, Mrs. F. B. Wilson, Mrs. J. T. Boylan, J. D. Newcomer, C. E. Greef, S. Whitehead, Mrs. W. E. Rathbone.

Librarian, Miss Clara E. Estabrook.

ESTHERVILLE.

The library movement in Estherville, began in 1880, in the form of an association composed of a few interested women, and the books were at first kept on the parlor table of one of its members.

From that time a library and reading room was maintained, and when in 1896, the question of maintaining a free public library was voted upon and carried, the association presented its books and furniture to the city.

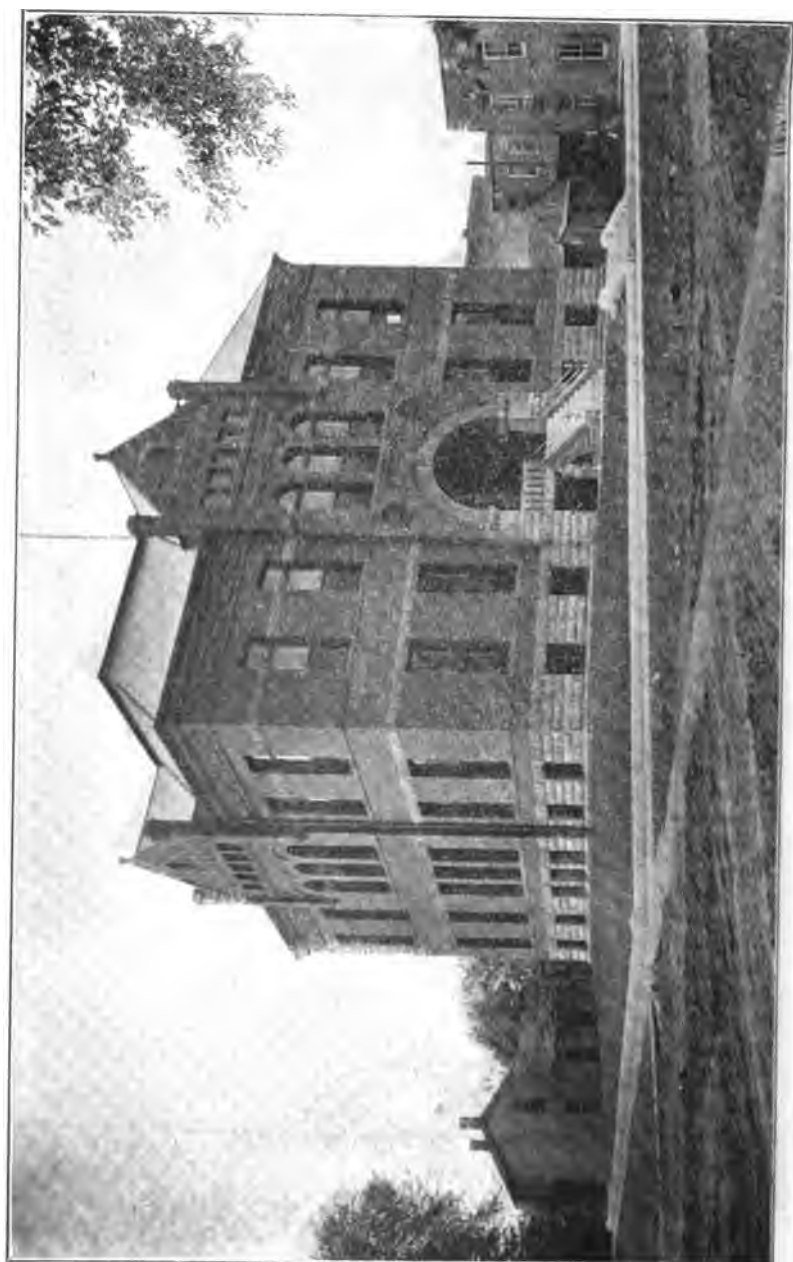
Mr. Carnegie gave \$10,000 in 1902, for a library building, which has been erected in the city park and is almost ready for occupancy.

The library contains about twenty-one hundred volumes and its annual income is about twelve hundred dollars.

The Traveling Library of the Iowa Library Commission has been used by this library to augment its own collection of books for several years.



ESTHERVILLE PUBLIC LIBRARY—CARNEGIE BUILDING.



FAIRFIELD PUBLIC LIBRARY - CARNEGIE BUILDING.

The present members of the board of trustees are: Mr. E. E. Hartung, president; Mrs. O. D. Barnum, secretary; Mrs. L. S. Williams, Mrs. H. F. Wells, Mr. W. T. Rhodes, Mr. F. P. Woods, Mr. C. W. Crim, Mr. I. L. Bingham, Mr. C. A. Nichols.

The librarian is Mrs. H. H. Davidson.

FAIRFIELD.

The Jefferson County Library was founded in the spring of 1853. To Mr. Ward Lamson, now president of the board of trustees is due the honor of being the prime mover of the undertaking. The first business meeting to take active steps toward its organization was held March 18, 1853, when articles of association were adopted and permanent officers elected. Ward Lamson assisted by E. P. Whipple, the essayist and Richard Hildreth, the historian, made the first purchase of books (500 volumes) at Boston. The library was first opened to the public on August 27, 1853, Dr. J. M. Shaffer acting as librarian. The number of books on the shelves at that time was 527, twenty-seven of which were public documents, seventy-five history, seventy-four biography, forty travels, fifty fiction, the remainder being divided among works of general literature, science and art. The library gradually increased in size and importance shifting from one location to another until in 1893 it went to its present splendid quarters in the Carnegie building. The period during the war of the Rebellion was the most critical one in its history, as the attention of the public was so universally absorbed in the great events then transpiring. In 1864 Mr. A. T. Wells began his work as librarian, a position he held with great credit for thirty-two years. In 1896 Mr. Wells declined to be a candidate for re-election and the place was filled acceptably by Mrs. Thomas C. Hoffman until the library passed into the hands of the city in 1900, at which time H. M. Dysart the present incumbent took charge. Senator James F. Wilson took great interest in the library and in later years was instrumental in inducing Andrew Carnegie to donate \$40,000 for the erection of its present splendid home. The site for the building was a gift from Mr. and Mrs. Wilson. This is the first library building erected by Mr. Carnegie west of Allegheny City, Pa., and one of the few if not the only one to which he contributed without any conditions of support. The building is a three-story fireproof structure, built of Lake Superior red sandstone and pressed brick. The lecture room seated with opera chairs will seat 300 persons. A large museum hall, reading room, stack rooms, and other large rooms furnish ample accommodations for every department of the library. Up to the year 1900 the library was supported by annual dues, fines, entertainments and contributions and each year it became a little more burdensome to those who felt responsible for its support. During the years 1898 and 1899 meetings of the stockholders and citizens were held and various plans submitted with a view of changing the old methods of maintaining and conducting the library to conform to new ideas and modern methods. A proposition was made offering to turn it over to the city and an election held in March 1899 resulted in an overwhelming majority in its favor. The name was changed to the Fairfield Free Public Library. Under the new order of things the patronage of the library has been very much increased and its perpetuity and future useful-

ness assured. The library at present contains 20,000 volumes; by economical management the limit of a two mill tax and small additional funds from fines and non-resident dues has enabled the board of trustees to replenish the bookshelves and meet all other obligations with a balance in the treasury. Our library of public documents is one of the most complete in the State. Through the untiring efforts of Senator Wilson during his lifetime it contains many volumes of great value which could not otherwise have been obtained from any source. The library also contains a number of books greatly prized on account of their great age and variety.

The museum has grown from a small case of mounted birds until its collection of zoological, geological and mineral specimens, Indian relics and pottery, relics of antiquity and curios from different parts of the world is surpassed by few, if any, in the State. Want of space forbids the mention here of many public-spirited citizens both abroad and at home who contributed liberally in various ways towards bringing the institution to its present high state of efficiency.

The present members of the board of trustees are as follows: Ward Lamson, A. W. Jaques, Mrs. W. C. Ball, Wm. Mendenhall, W. G. Ross, Mrs. J. S. McKemey, R. J. Wilson, Mrs. R. B. Loudon, C. J. Fulton. H. M. Dysart, Librarian.

FOREST CITY.

At a mass meeting of the citizens of Forest City, held March 12, 1897, the initial steps were taken for the purpose of perfecting an organization for the establishment of a Free Public Library. An extensive report on the matter of libraries in general was then presented by B. J. Thompson, which was accepted, and officers were chosen. Some days later, at a meeting of the executive committee, B. A. Plummer, president of the new organization, proposed an unconditional donation to the association of a lot on Main street to be used as a site for a library building, and also \$200 in cash. This was the beginning of a series of liberal donations made by the citizens of the town.

Immediately subsequent to this a committee was appointed to draft articles of incorporation, and as a result the association became a body corporate on the 24th of May, 1897, incorporated for fifty years, optional with the members. The incorporators were B. A. Plummer, L. O. Hatch, B. J. Thompson, T. Jacobs, Dr. H. R. Irish, Mrs. E. W. Virden, and Mrs. E. Perkins.

At the general election held in Forest City, March 28, 1898, the question, "Shall Forest City establish a Public Library?" was submitted to the voters thereof, the result being a decidedly affirmative vote. On April 8th following, this association turned over to Forest City all the subscriptions for property or money, at that time in its possession, amounting to about sixteen hundred dollars in cash and a lot 22x80 on Clark street, opposite the court house. Proceeding upon this the mayor of Forest City appointed the first board of trustees.

In June, 1898, the secretary began to correspond with various architects with the view of obtaining bids for the construction of a library building. On August 29, 1898, the bids were closed, and upon deliberation the con-

tract was entered into with Mr. C. H. Lackore of this city, at a consideration of \$1,865. In the summer of 1899 the building was thrown open to the public.

The present members of the board of trustees are: B. A. Plummer, Dr. H. R. Irish, T. Jacobs, B. J. Thompson, L. O. Hatch, M. Barton, Miss Helen Halversen, and John Boman. The first librarian was Miss Aura Brown. The present librarian is Pearl Bahner.

The valuation of building and lot is about four thousand dollars. Total book value is about one thousand and five hundred dollars, with a total number of 1,432 books.

FORT DODGE.

The Fort Dodge Library Association was organized May 1, 1874. Its financial nucleus was a subscription of \$216, raised by a committee of ladies.

A room suitable for library purposes was placed at the disposal of the association free of rent, and the services of the librarian were volunteered so that all the expense incurred for starting the library was for a book case, a book in which to keep an account of the books loaned, and stationery.

About ninety volumes of miscellaneous books and a large number of public documents which had been donated by the Hon. R. T. Gue to a Young Men's Christian Association in Fort Dodge were turned over by the Y. M. C. A.

In May, 1875, articles of incorporation were drawn and the association became an incorporated body and W. H. Johnston was its librarian from 1874 to 1895.

During the year ending May 1, 1880, the annual dues were not collected, no books were purchased and at the end of the year the annual meeting was not held. In July of the succeeding year the librarian having had about twenty dollars of dues for the previous year paid in to him, expended it in books, publishing a list of the new books purchased in the papers. A number of new subscribers were secured, the money being immediately expended in books and notices of the same published as before. At the end of the year \$235 had been collected and \$258 had been paid for new books and 249 new books added to the library.

For the next five or six years the library was in a fairly prosperous condition, about two hundred dollars was paid annually for books and the annual circulation was about five thousand.

In November, 1883, the first catalog was issued, cataloging 2,110 volumes.

A small debt was incurred in printing the catalog, this debt and the increased expense incident to the growth of the library, without corresponding increase in the income, grew until in the fall of 1887 it amounted to \$300.

In April, 1888, the ladies of the city held a three days' carnival for the benefit of the library. The net proceeds of the carnival were \$542, enabling the association to pay off an indebtedness of \$306 and leaving \$236 for the purchase of new books.

At the annual meeting held in May, 1889, a committee was appointed to go before the common council and urge them to make an appropriation in aid of the library.

Authority to do this had been given at a city election held in March, 1884, by a majority of nearly four to one, but had never been exercised on account of lack of funds. The matter was so kept before the city council during the summer of 1889, that on the first day of December, 1889, an appropriation of \$772, being the equivalent of a one mill tax on the assessed valuation of the city was made to aid in maintaining a free public library in the city of Fort Dodge for one year, to be continued at the pleasure of the city.

The association agreeing to expend \$500 of the amount voted for new books to be the property of the city if at the end of the year the city should decide not to aid in maintaining a Free Library any longer.

The experiment proved so satisfactory that at the end of the year the common council entered into a contract with the Library Association for the establishment of a Free Public Library, agreeing to levy a one mill tax annually in aid thereof, the association to expend \$400 of that amount annually for books to maintain a Free Public Library free to all residents of the city.

The selection of books and the conduct of the library to be under the direction of a joint committee of the city and of the association.

January 1, 1895, the library was turned over to the city and became a Free Public Library. W. H. Johnston resigned as librarian and was succeeded by Mrs. J. M. Carpenter.

In December Andrew Carnegie made a donation of \$30,000 to the city of Fort Dodge for the erection of a public library building upon the usual conditions.

In June, 1899, Messrs. Webb Vincent, O. M. Olson and Geo. S. Ringland of Fort Dodge purchased at a cost of \$6,500 and presented to the city a site for a library building and donated \$1,000 additional towards the building, conditioned on the citizens of Fort Dodge raising a further sum of \$5,000 for the library building and the city's agreeing to accept such donations and to support said library in the future with the maximum tax allowed by law to be levied for the support and maintenance of a free public library.

The above donations were promptly accepted by the city and Messrs. Webb Vincent, O. M. Olson, Geo. S. Ringland and Leon Vincent and the mayor, ex officio, were appointed a committee to have full charge of the erection of such library building.

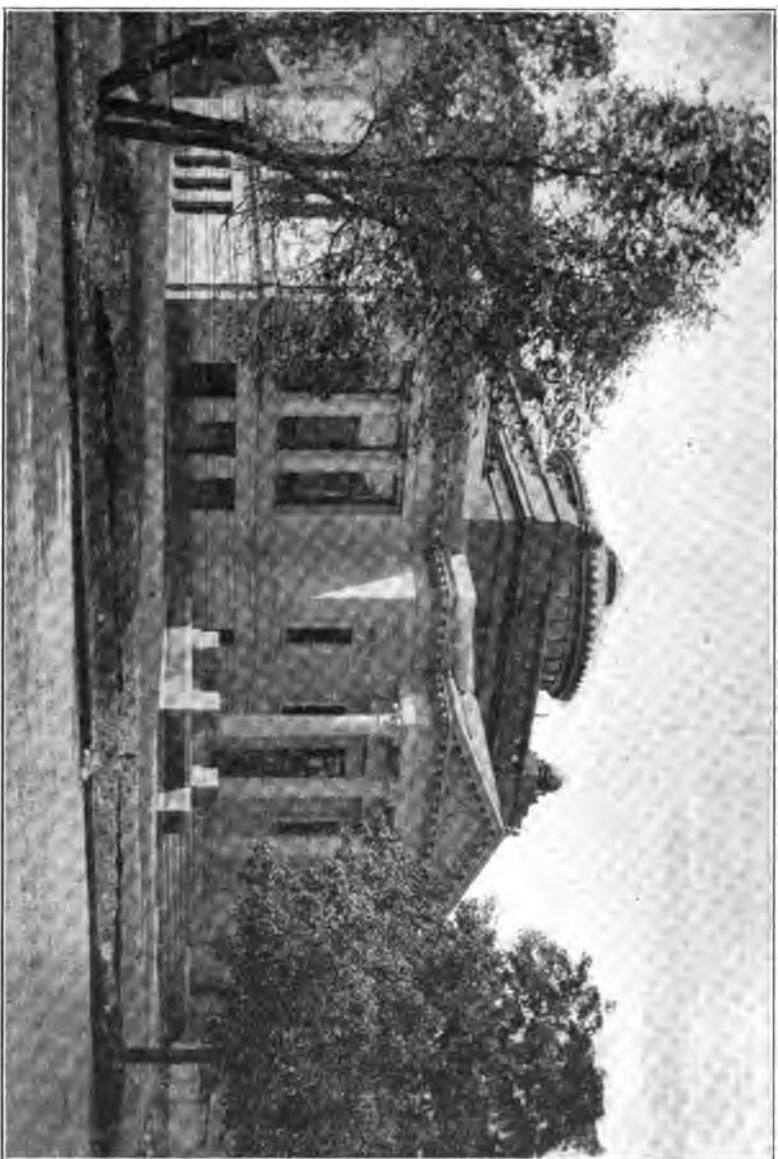
Owing to the failure of the contractors the completion of said building has been greatly delayed, its completion and occupancy is expected early in the fall of 1903.

During the past year the library has been classified and cataloged by Charlotte E. Goetzman, a graduate of the Albany Library School, and made ready for entry into its new quarters. One member of the library staff, Miss Gertrude Campbell, attended the Iowa Summer Library School. The trustees are as follows:

W. H. Johnston, president; Frank Farrell, secretary; O. M. Olson, Webb Vincent, Miss Margaret Dolliver, Miss Marie B. Welles, George S. Ringland, M. F. Healy, Mrs. S. C. Carpenter.

FORT MADISON.

The Cattermole Memorial Library of Fort Madison stands as an enduring and most creditable monument to the memory of Henry Cattermole and



FORT DODGE PUBLIC LIBRARY—CARNEGIE BUILDING.



FORT MADISON PUBLIC LIBRARY—CATTERMOLE MEMORIAL BUILDING.

Elizabeth Cattermole, his wife. Mr. Cattermole was born in London, England, and came to America when a young man, along in the twenties of the last century, settling at Buffalo, N. Y. While a resident of Buffalo he returned to London and married Elizabeth Cattermole, his cousin. Returning to Buffalo he remained in that city for a time, then came west to Warsaw, Ill., remaining there for something over a year, coming to Fort Madison in 1841 where he lived to the time of his death in 1891. During the last few years of his life Mr. Cattermole had it strongly in mind to establish in Fort Madison a Manual Training School for boys, his desire being to liberally endow such an institution if other citizens could be induced to unite with him in the building of it. His attempt to found the institution did not succeed and he died without seeing any public monument of that character erected through his efforts. After his death his widow, to do honor to his memory, settled upon the erection of a public library at the suggestion of Mrs. Carrie Cattermole, as the best and most feasible means to that end, and under the direction of Mr. H. D. McConn, as advisor and executor of the estate, the plans for the Cattermole Memorial Library were drawn and the building erected, at a cost of about \$25,000. In accordance with the wish of Mrs. Cattermole the building was erected on the east side of Pine street between Second and Third street, on the site of the residence occupied for many years by her husband and herself. The building was dedicated in 1893 and has been in use for the purpose intended since that time. Mrs. Elizabeth Cattermole did not have the satisfaction of seeing the building in use, although she lived to see it practically completed, it being formally turned over to the city on February 21, 1894, a month after her death, which occurred January 20th.

The library is a two story building. It is built of rough cut stone, granite, brick, red mortar, and terra cotta, while a red tile or clay shingle roof covers it. The number of books issued for home use last year was 39,675 volumes. The circulation each year has steadily increased.

The members of the present board of trustees are: Mr. S. M. Casey, president; Mrs. O. E. Newton, Mrs. K. Robinson, Mrs. E. D. Smith, Mr. J. P. Cruikshank, Mr. N. C. Roberts, Mr. A. Person, Mr. W. I. Morrison, Mr. S. Schier. Miss Jennie Ingalls is librarian.

GLENWOOD.

The Woman's Club of Glenwood has maintained a free library for Glenwood since 1895, the funds for the maintenance of the library and the purchase of new books being obtained by entertainments and from annual subscriptions obtained from the business men and others who were interested.

An effort was made at the spring election of 1902 to vote a municipal tax for the support of the library, but this was defeated, largely on account of the expense in which the city had been involved in consequence of a small-pox epidemic.

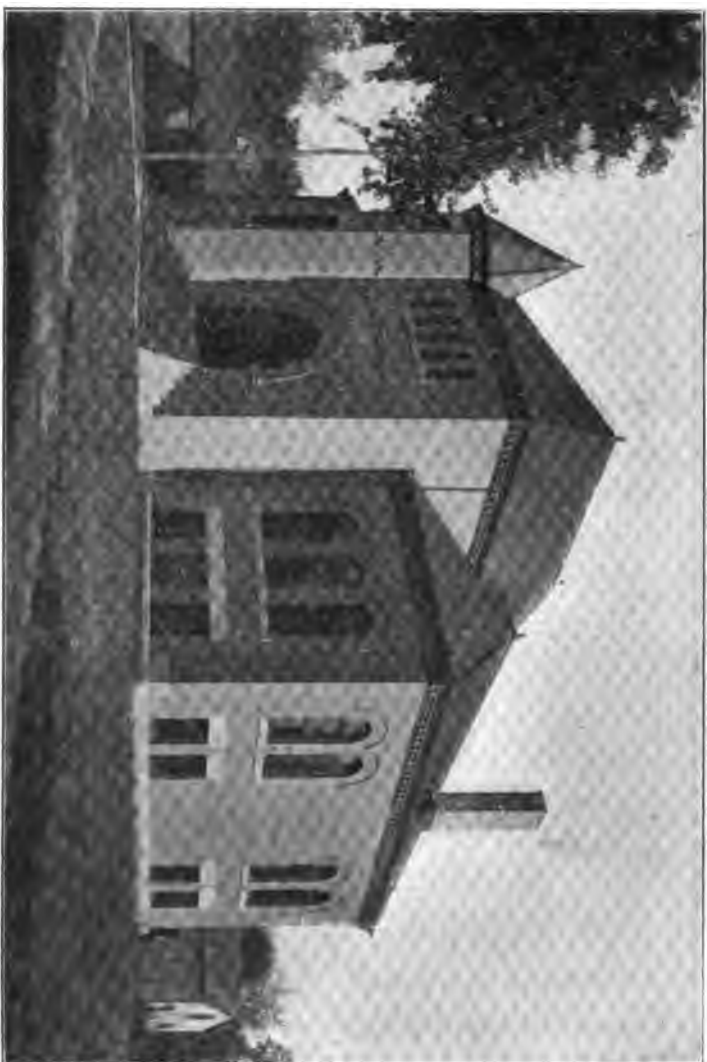
In the summer of 1903 an offer was received from Mr. Carnegie to erect a library building to cost \$7,000 on the usual conditions, and it was therefore necessary to submit the question of municipal tax to the voters for the maintenance of the library before Mr. Carnegie's offer could be accepted by the council. The vote being favorable the gift was accepted, and the library belonging to the Woman's Club, consisting of about one thousand and three hundred volumes, will be turned over to the city.

The members of the present board of trustees are: A. D. French, president; Mrs. W. F. Hill, secretary; C. E. Dean, William DeWitt, E. B. Woodruff, H. S. Fleming, Mrs. E. S. Bogart, Mrs. D. L. Heinsheimer, Mrs. J. L. Bellati. Librarian, Mrs. Henrietta Lyon.

GRINNELL.

The desirability of a public library in Grinnell had been discussed many times in the history of the town, but it was not until 1894 that a special agitation, in which the churches were largely concerned, culminated during the summer of that year in a mass meeting held August 1st. At this meeting a committee was appointed to make a beginning. Rooms were secured in the Morse block on Broad street and a reading room was opened immediately. A little later, Rev. E. M. Vittum, pastor of the Congregational church, was made chairman of a committee to secure and arrange books for a circulating library. This nucleus was composed of some books formerly the property of the Y. M. C. A. library, some donated by the Congregational church and some given by various citizens, and was opened to the public about December 1st. Up to this time no regular librarian had been employed, but committees from the young people's societies of the Methodist, Congregational and Baptist churches volunteered their services in taking charge of the rooms. In December the first librarian was employed. The management of the library was under the control of a committee, and the funds for its maintenance were secured in the way of subscriptions from friends of the movement. In January, 1895, the treasurer of the library disappeared, and with him about \$100 of the funds thus collected. A mass meeting was called to consider the situation, and an association was formed and officers elected. The Board of Trade made an exceedingly timely appropriation for the support of the library, and later the confidence of the citizens in the success of the enterprise was evidenced by their substantial support, which was continued until the city voted a tax of one half mill, which became available in April, 1897. Several different persons had acted in the capacity of librarian during the year 1895, but a permanent librarian was becoming a necessity. The last of October of that year the association elected Mary E. Wheelock to the position, the library being open five hours each week day and three hours on Sunday. After a year's existence, the library consisted of about seven hundred and fifty volumes, and the patronage left no doubt as to the wisdom of the project.

The book clubs and the woman's clubs were generous in contributions of books, the Priscillas having for their work the improvement of the children's department, and frequent gifts were received from individuals, while occasional purchases were made from the library fund. With the increase of books and attendance, in 1899, the question of larger quarters confronted the board. Mr. H. W. Spaulding, a former member of the board, offered a large room in his new block on Main street, free of rent, and guaranteed the payment for the light and heat, which offer was accepted, and the library was transferred in February, 1900. At this time the need of reorganization was becoming more apparent than ever, though a rough classification had been attempted, but without very satisfactory results. For preparations for this work, the librarian was given leave of absence with regular pay, to at-



GRINNELL PUBLIC LIBRARY—GIFT OF HON. JOEL STEWART.



HAMPTON PUBLIC LIBRARY-CARNEGIE BUILDING.

tend the Cleveland Summer School of Library Science, in July and August, 1900, and during the next year the library of more than three thousand volumes was reclassified, accessioned and a shelf list made, and an up-to-date charging system introduced.

In December, 1899, Hon. Joel Stewart, for many years a resident of Grinnell, and at one time a member of the State legislature, offered to give the city a library building provided the Congregational Society would give the lot north of their church for the purpose. This was promptly arranged and a substantial building was erected in 1901-1902, and dedicated in May, 1902. The need of books to equip the new building was suggested, and Mr. Stewart circulated a subscription paper, raising about thirty-five hundred dollars for a book fund. This made possible the addition of many valuable books, more than doubling the number of volumes in the library. The lack of a card catalog has been a hindrance to the work, but now cards are being purchased from the Library of Congress as fast as other work will permit.

The library now contains nearly seven thousand volumes, and maintains a good reading room equipped with nearly eighty periodicals, dailies, weeklies and monthlies. During the last winter the circulation exceeded three thousand books per month. The children's department contains about one thousand books, and more than one third of the circulation is from this department.

The library is supported by a two mill tax, which amounts to a little less than \$1,500 per year. Besides the librarian, one assistant is employed for four hours of each day, and a second attends to the mechanical work on the new books, coming in as occasion demands.

Special attention has been given to work with the schools, a well equipped reference department being at the disposal of teachers and students. Teachers are encouraged to make use of the library, and any number of extra books are issued to them for use in the school room. The work with the schools is an important feature of the work of the library, and a source of much satisfaction on the part of teachers and library staff.

The members of the present board of trustees are: Rev. E. M. Vittum, president; Mrs. W. S. Roby, secretary; Dr. E. W. Clark, Mr. C. C. Keister, Mrs. Ed Kemmerer, Mr. P. A. McMillen, Mrs. W. H. Newman, Mrs. D. W. Norris, Prof. L. F. Parker.

HAMPTON.

At the municipal election in March 1891, it was voted to establish a free public library in Hampton. A board of five members was appointed and organized December 5, 1891, with the election of L. B. Raymond, president, and G. A. Corning, secretary.

January 28, 1892, a contract was made by the library board with the board of supervisors for the use of the corner room in the basement of the court house, and in 1896 the use of an adjoining room was obtained. In pursuance of provision under act passed by the Twenty-fifth General Assembly, nine trustees were appointed and said trustees met and organized, July 1, 1895. March 20, 1901, Mr. Carnegie's offer of \$10,000, for a library building was received. The gift was accepted and the city purchased the lot.

Liebbe, Nourse & Rasmussen, of Des Moines, were selected as architects, the contract let, and it is expected that the building will be ready for occupancy in the near future.

The members of the present board of trustees are: L. B. Raymond, president; Charles Krag, secretary; T. B. Taylor, B. F. Ferris, T. J. B. Robinson, G. H. Lambert, B. H. Mallory, J. V. Luke, J. N. Mallon.

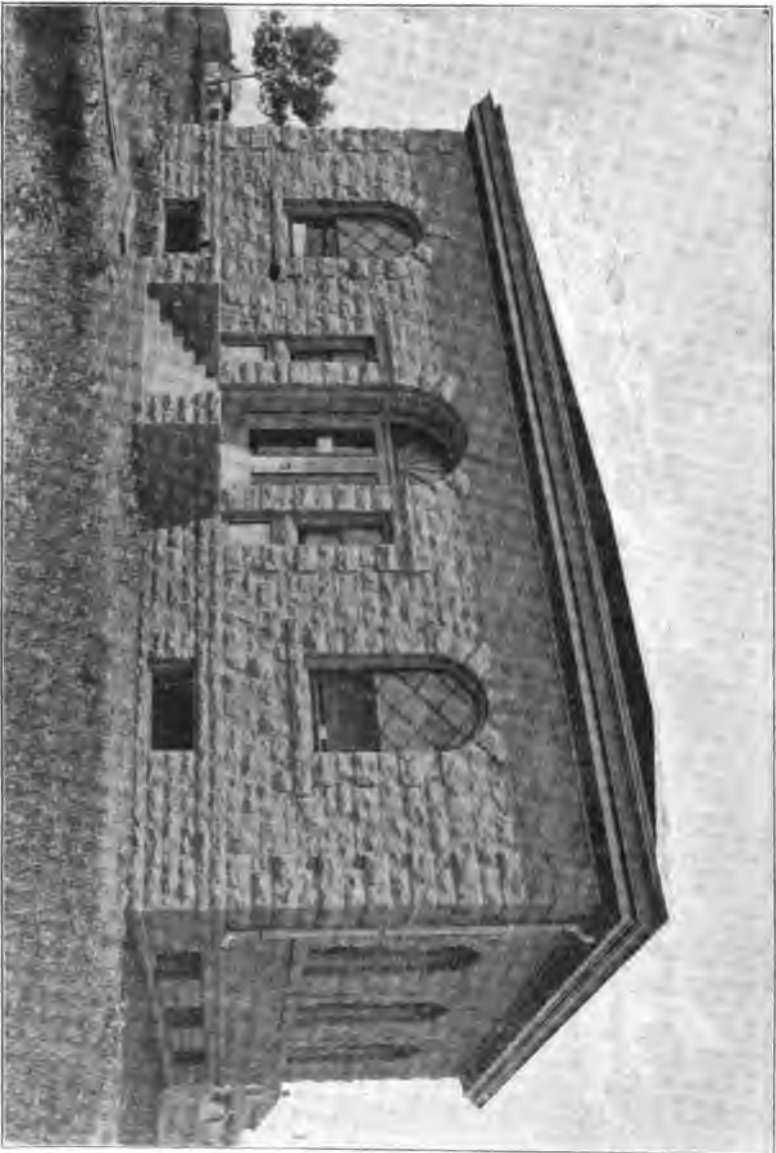
Miss Carrie O. Barker, Librarian.

HAWARDEN.

In May, 1900, a few ladies who were anxious to see a public library in Hawarden, called a meeting of citizens to organize a library association. Although the attendance was small an organization was effected and a board of trustees elected. This board met promptly and elected Arthur Whitfield president, Reverend Burleigh secretary, Mrs. A. R. Barber vice president and Mrs. D. O. Stone treasurer.

The summer and fall was spent in soliciting subscriptions, perfecting plans and selecting the books to be purchased. No subscription was to be collected until \$600 was subscribed. The I. O. G. T. local lodge donated their library valued at two hundred and fifty to three hundred dollars. Three hundred dollars was raised by subscription and the remainder by an art and curio exhibition. Enough money was placed in the bank to pay the current expenses for a year—the rest of the money was spent for books which, added to the Good Templars' library, made a total of 700 volumes. As there was not enough money left to hire a librarian, the ladies of the board with the help of a few others kept the library open, in turn, two afternoons and two evenings each week. Each lady acting as librarian, reported to and was under the direction of, a member of the board, this member reported monthly to the board and was held responsible for the management of the library. A room was rented and fitted up and the library and reading room was first opened to the public January 5, 1901. Each person paying \$1 became a member of the association for one year with the privilege of drawing books according to the rules. In March, 1901, through the efforts of the library workers the question of a library tax was submitted to a vote and carried by a majority of fourteen. As this tax would not be available for a year, the association retained the management of the library for this period before fulfilling their promise to turn their books and other property over to the town. The Board of Trustees appointed by the mayor were J. M. Lynn, B. T. French, D. O. Stone, A. S. Colby, H. P. White, F. J. Daugherty, Mrs. C. A. Plank, Mrs. Wm. Hitchcock and Mrs. Annabel R. Barber, president. In July, 1902, a member of the library board wrote to Mr. Carnegie describing the growth of the Hawarden library and its need of a building. In reply Mr. Carnegie was kind enough to state that he would give Hawarden \$5,000 for a library building, only requiring the continuance of the \$400 tax already established.

Mr. F. E. Watkins proposed to the board that he would attend to collecting the money from the citizens to pay for the lot for a building site, providing his choice of a site would be approved by the board. The board accepted his proposal and the lots in question were purchased for \$500. They are situated a block off of the main street, and are of convenient access from the schoolhouse.



HAWARDEN PUBLIC LIBRARY—CARNEGIE BUILDING.



INDEPENDENCE PUBLIC LIBRARY—GIFT OF PERRY MUNSON.

Messrs. B. T. French, D. O. Stone and J. M. Lynn were appointed building committee. Smith & Gage, of Des Moines, were chosen architects, and Wm. Payne of Hawarden, was awarded the contract to build the library. It is of Sioux Falls granite, and contains a delivery room with alcove for books, a children's alcove and a reading-room connected with the main room by arches. There is also a librarian's office and an extra room for committee meetings, etc. The basement is commodious, but is at present unfinished. The number of readers now enrolled is 371. There are from six to eight hundred visitors each month, and there are usually five hundred books issued. There are now 1,009 volumes in the library.

Besides this Mr. G. W. Welch has kindly placed his large collection of books in the library for reference use.

The librarian, Miss Jennie P. Smith, has taken advantage of the Iowa Summer School for Library Training under the direction of Miss Alice S. Tyler, of the Library Commission.

HAWKEYE.

The people of Hawkeye voted in the spring of 1901 to maintain a free public library by municipal tax, the Bopp brothers, residents of Hawkeye, having offered to present about one thousand volumes to the town on condition that a tax be voted. Hawkeye has the creditable distinction of being the smallest town in the State to support a free public library, the population, according to the census of 1900, being 518.

The members of the present board of trustees are: W. N. Rogers, president; Mrs. A. Ridley, vice president; J. E. Palmer, secretary; Mrs. J. H. Blunt, Mrs. A. R. McGood, T. N. Carroll, Mrs. John Shales, Mrs. H. R. Palmer, Mrs. J. G. Bopp.

Librarian, Albert Ridley.

INDEPENDENCE.

The Free Public Library of Independence was established September 12, 1873, under the act of the Fourteenth General Assembly providing for the establishment and maintenance of free public libraries in cities and incorporated towns.

A. B. Clarke, R. Jacobs, E. B. Older, J. L. Loomis, John Sexton, J. F. Coy, and G. B. Warne comprised the first board of trustees.

The beginning was small. Twenty books costing twenty-six dollars, two dailies, a few newspapers sent free by publishers, a number of books and magazines contributed by citizens constituted the library for a few months.

D. H. Gill was the first librarian. His successors were Angie Spicer, Mary Deering, F. M. Abbott, Nettie Jordan, Elizabeth A. Sanford, and Effie Jacobs, the present librarian who has held that office since December 17, 1894.

May 25, 1874, the building occupied by the library was destroyed by fire and all the property of the library was lost except the records of the secretary and treasurer and the books which were in the hands of patrons.

In 1894 Perry Munson, a prominent business man of Independence, offered to erect a building for the library and other purposes if a suitable

location would be furnished for the same. Col. Jed Lake promptly offered to furnish such location and conveyed a portion of his residence property for that purpose, and Mr. Munson provided for the erection of the building at a cost of about fifteen thousand dollars.

There are 6,167 volumes in the library at present. The reading room is supplied with three dailies, eight weekly and ten monthly periodicals.

The library is open to the public daily from 1:30 P. M. to 10:00 P. M. Sundays from 1:30 P. M. to 5:00 P. M.

The members of the present board of trustees are H. Burlingham, David Donnan, O. M. Gillett, L. W. Goen, M. W. Harmon, C. E. Ransier, B. W. Tabor, and Stephen Tabor.

Mrs. Effie Jacobs, librarian.

INDIANOLA.

In 1879 seventeen gentlemen formed a library club, each one contributing from five to ten dollars to purchase books, one of its number taking charge of them.

In 1880 more members were added to the association and more books purchased, a room fitted up and a librarian appointed. The work was carried on for about two years when the library was closed for want of funds. In 1882 some of the young people formed a club, which they called the "Enterprise Club", for the purpose of making the library association a free library.

By giving concerts, amateur theatricals and ice cream socials, they succeeded in obtaining some money and interesting the people in the library. In the meanwhile the association and friends were urging the citizens to vote a tax for the support of the library.

In 1884 a tax was voted, and in June the Indianola Free Public Library was opened in two handsome rooms furnished by the Enterprise Club and the city, the association turning over 575 books to the city.

In February, 1894, the library was moved into more commodious rooms. In July, 1894, the library passed under control of nine trustees appointed by the mayor, according to the statutes passed by the Twenty-fifth General Assembly.

The library has steadily grown in number of books, attendance and usefulness to the public schools, college and citizens. The library has now 4,700 books.

In November, 1902, the library board directed its chairman, Mayor Schooley to make an effort to secure a library building from Mr. Carnegie, and in January, 1903, Mr. Carnegie offered \$10,000 for a library building, with the usual conditions, which the city promptly accepted. The site purchased is within one block of the public square, easy of access to the public schools, college and citizens.

The members of the present board of trustees are: President, W. H. Schooley; Secretary, J. W. Radebaugh, E. R. Guthrie, J. H. Schee, Geo. Clammer, J. O. Watson, J. H. Whitney, J. Mayers and H. H. Hartman. Librarian is Hannah M. Babb.



IOWA CITY PUBLIC LIBRARY—CARNEGIE BUILDING.

IOWA CITY.

"On the twentieth day of January, 1897, the Iowa City Public Library was formally opened, Hon. Geo. W. Ball presiding in the unavoidable absence of Judge Wade, president of the library association."

The above quotation is a brief newspaper statement which, at that date, looking backward was filled with the history of the Iowa City Library Association; but, looking forward was filled with prophecy for the Iowa City Public Library.

The history of the library association is the history of every band of pioneers; earnest effort, undaunted courage, unwavering purpose, union, strength, success.

The unwritten history of the Iowa City Library Association is, that the nucleus of one of the farthest reaching influences of the city originated in a prayer meeting where only "two or three are gathered together."

The written history begins with the record of a meeting of representatives of the pastors and young people's societies of the city, August 28, 1896. The immediate results of this meeting were a committee appointed to solicit funds for the enterprise, and a popular meeting appointed for September 3, 1896.

The names of those whose earnestness of purpose carried the undertaking to success are recalled in gratitude. It is hard to choose where all responded so enthusiastically and generously, but the following names are inseparably connected with the Iowa City Library Association: S. K. Stevenson, Alice Luscombe, Geo. W. Ball, Geo. Hummer, B. Shimek, Bertha G. Ridgway, M. J. Wade, W. P. Coast, Max Mayer.

The persons whose names appear above constituted the board of directors of the library association and, with the exception of Alice Luscombe (Mrs. Van Law) who was succeeded September 28, 1898, by Elizabeth Feikner, they also constitute the present board of trustees of the public library. To this permanency of the board of trustees is due the steady growth of the library. The same public spirit which originated the library movement in Iowa City has fostered its growth with unfaltering care. The prophecy is fulfilled as those would have it who thought, planned, watched and worked.

Every home in Iowa City has felt the influence emanating from the public library.

In less than one month from the day the doors were opened to the public, 836 persons had applied for cards entitling them to the privileges of the library; 2,226 books had been issued, and 4,407 visitors had been present at the library rooms. To meet these demands ever increasing, there were but 1,300 volumes. That the library would grow and must grow was a fact no longer doubtful. How best to foster and direct that growth was the problem which confronted the board of directors.

The solution of this problem was given by the board of directors upon the 1st day of March, 1897, upon which day the question of establishing a free public library as provided by the Code of Iowa was submitted to vote at the annual municipal election and the question was carried.

Fifteen days later, on March 15, 1897, Mayor C. M. Remo, by and with the approval of the city council, appointed the members of the board of directors of the Iowa City Library Association, as a board of trustees for the Iowa City Public Library.

The officers of the board of trustees, as unanimously elected on March 17, 1897, were: M. J. Wade, president; Bertha Ridgway, vice president; S. K. Stevenson, secretary; Geo. Hummer, treasurer.

The citizens worked earnestly for the success of the public library.

Under the auspices of the board of trustees, St. Mary's Lyceum, on the 26th of November, 1897, presented the play, "Honor Before Wealth."

For the benefit of the library, a course of lectures was given by professors Macbride, Wilcox and Shimek, Doctor Gilchrist and Judge Wade.

One hundred and fifty volumes belonging to Safarik Lodge No. 75, C. S. P. S., of Iowa City, were placed for circulation in the public library, and remained there until the dedication of the C. S. P. S. hall.

A gift from Dr. J. L. Pickard added one hundred and twenty volumes. Through the same spirit of helpfulness many volumes have found their way from private shelves into the public library.

In the past two years gifts to the public library have numbered nearly three hundred volumes, with fifteen hundred or more numbers of magazines. These gifts of odd numbers of magazines are of great value to the library, for from these odd numbers many a volume is completed that, bound, becomes a valuable work of reference.

In the past year the library has sent into the homes of Iowa City, 36,693 volumes, at least 8 per cent of which were books of solid worth.

The visitors find in the reading room sixty-two current magazines, instead of the twenty placed at their disposal in 1898, and the daily papers, four of which are bound and placed on file. That its resources may meet as many demands as possible, a card catalog serves to direct the seeker to the subject upon which he desires information.

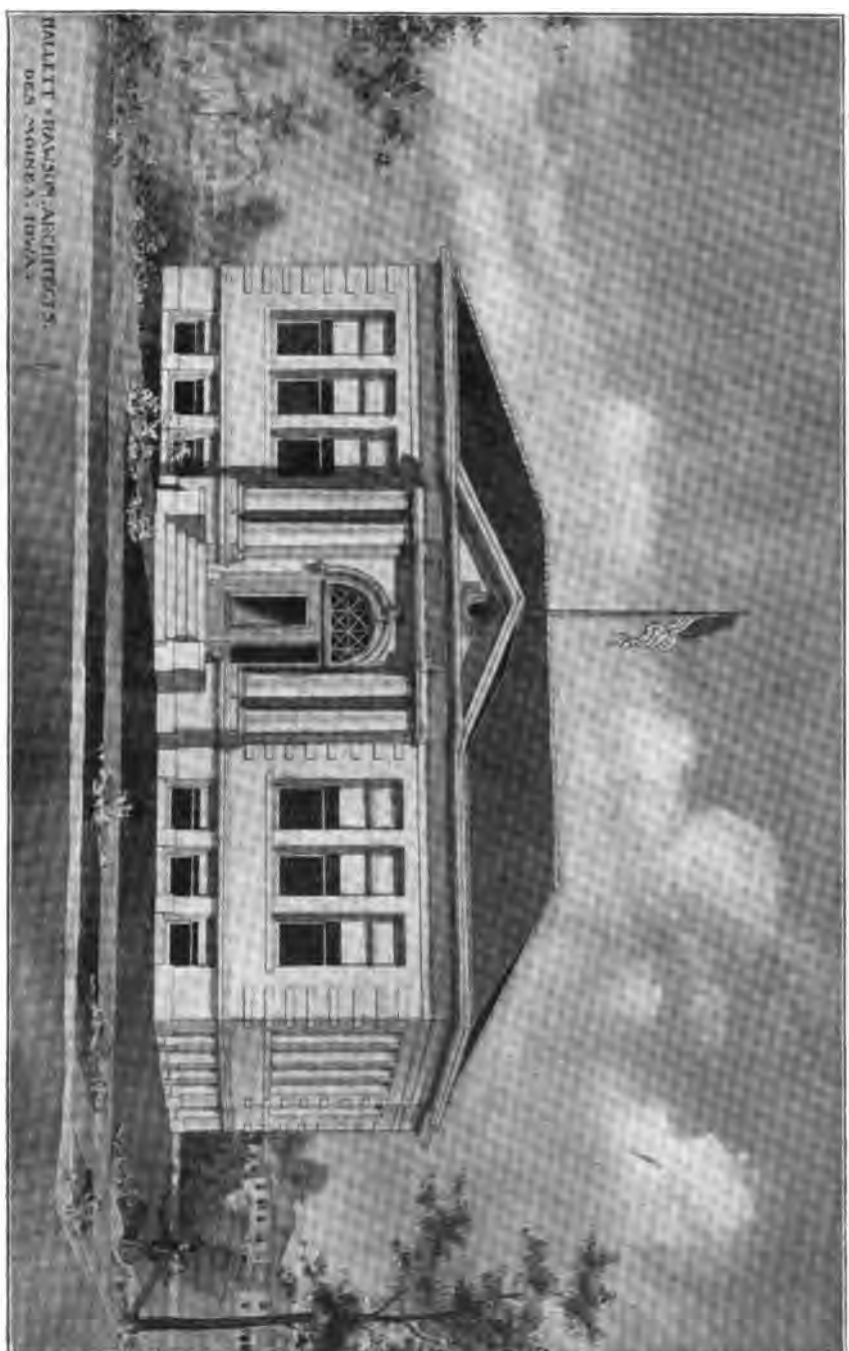
The following librarians have served the institution: Andrew Howell, S. H. Sperry, Gilbert McElroy, Leslie Switzer. Each contributed his quota as librarian. Upon accepting the resignation of G. A. McElroy the highest appreciation of his faithfulness and ability was expressed by the board of trustees. Miss Adelaide C. Lloyd is the present librarian.

The original home of the public library was the Kenyon building on Iowa avenue. On June 17, 1901, the library was moved to the Cannon and Pratt building on College street. These rooms, the present location of the library, are open to the public daily from 8:30 A. M. to 12 M., and from 1 P. M. to 9 P. M. The library is also open every Sunday from 2 P. M. to 5:30 P. M.

A gift of \$25,000 from Andrew Carnegie was secured by Hon. Martin J. Wade and Senator W. B. Allison and this was formally accepted March 24, 1902, increased by \$10,000 April 14, 1903, with the donation of an \$8,000 lot, the gift of Iowa City, assuring a permanent home, now in the process of erection, for the steadily increasing library.

IOWA FALLS.

The Iowa Falls Public Library was founded in December 1895 in a small way by a few earnest citizens. About two hundred books were donated, also tables, chairs and other necessary furniture. A small room was rented, a librarian elected and several periodicals furnished for the reading room. The library was to be kept open six and one-half hours each day for ten



THOMAS H. BROWN, ARCHT.
DES. 1904.

JEFFERSON PUBLIC LIBRARY-CARNEGIE BUILDING.

months in the year and three days each week through the months of July and August.

A stock company was formed and a library fund created by selling shares to the amount of \$1,700. This fund was added to at various times by small donations of money and by the proceeds of suppers, entertainments, etc.

In 1899 a tax was voted and the library consisting of less than one thousand bound volumes was formally presented to the city.

In November, 1901, under the direction of Miss Tyler, secretary of the Library Commission, the library was reorganized on a systematic basis. The books were classified by the Dewey System of Classification, a card catalog was started and a card charging system adopted. The librarian attended the Summer Library School, under the auspices of the Iowa Library Commission.

The annual income is now over one thousand dollars. There are about two thousand five hundred volumes on the shelves. There is a well patronized children's corner and a reference department of several hundred well selected books.

The library is constantly growing in usefulness. It is now regarded as a fixed factor in the local educational system, not only as touching the public schools and the college students, but it is constantly patronized by the several woman's clubs of the city, whose membership quickly recognized its value and assistance in all student research. Its great value as an educational factor is now generally conceded and its work has the hearty appreciation and support of the public school staff and of all the thoughtful citizens as well. The traveling library of the Iowa Library Commission has been used to supplement the collection of books on special subjects of club study.

The city council has recently accepted a gift of \$10,000 from Mr. Andrew Carnegie, which has been supplemented by \$2,500 from Mr. E. S. Ellsworth. An ideal site has been secured and plans are now being considered for a new library building.

The members of the present board of trustees are as follows: J. L. Farrington, president, W. H. Woods, secretary, Mrs. E. S. Ellsworth, Dr. M. W. Hill, Mrs. L. E. Jones, Miss Mary Bliss, Mrs. H. C. Miller, Mrs. J. D. Steere, R. C. Kennedy.

The librarian is Mrs. Florence G. Anders.

JEFFERSON.

The idea of a public library for Jefferson had its origin in the several literary clubs of the city.

For some months they had realized the need of such an institution, through the lack of suitable and sufficient reference books with which to carry on their work.

In the Spring of 1900, the matter was fully discussed at a meeting of the "Culture Club," and an invitation sent to the "Friday Club," and the "Chautauqua Circle," asking their aid and co-operation in an Art and Loan Exhibit, proceeds to be used in founding a free public library. Such an exhibit was held, and about one hundred and seventy-five dollars was realized from the venture.

During the summer the Sorosis Club issued a "Book of Quotations" for the benefit of the library fund, and realized \$75. In the following November the Culture Club gave a supper and bazaar, which added \$100 to their fund. They also compiled a cook book, and by the sale of same, realized \$85. This was followed a week later by a "Book Social" given by the ladies of the Friday Club, to which the general public was invited and each person asked to contribute a book. This resulted in a miscellaneous collection of about three hundred and fifty books.

Meanwhile the presidents of the Sorosis and Culture clubs, circulated a subscription paper for the purpose of purchasing the "Warner Library." This amount was easily obtained and enough more to purchase a number of other valuable reference books.

The public spirit and interest manifested in the enterprise, and the readiness with which the money was donated, prompted the city solicitor, Mr. E. B. Wilson, to advise offering the library and funds to the city council, and ask that a tax for the support of a free public library be voted on at the coming election. Acting upon this advice, a joint meeting of the clubs was held in the spring of 1901, and books, money, etc., were turned over to the city council, amounting to 950 volumes and \$325.22.

The council accepted the gift, and a tax for the maintenance of a free public library was voted on at the spring election. The Mayor then appointed a board of directors as follows: Capt. Albert Head, Dr. F. M. Dean, Owen Lovejoy, Dr. H. Kettell, E. B. Wilson, Henry Haag, Mrs. D. Austin, Mrs. May Warrington and Mrs. E. H. Barrel, and the board organized in July, 1901. Mrs. Maud Culbertson was elected librarian. Captain Head tendered the use of two rooms over Greene County Bank, rent free for one year, which offer was duly accepted. He also presented the library with a set of Congressional Records, and shelving for same.

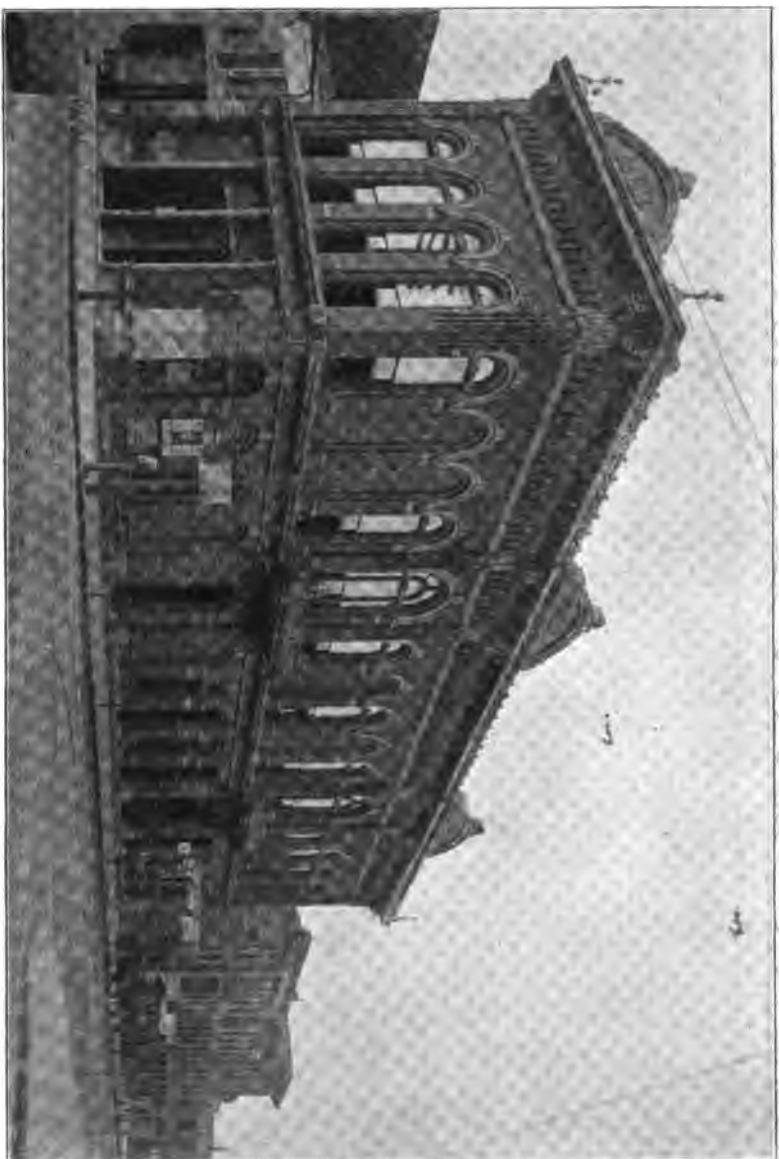
The work of classifying, and accessioning was performed by the librarian with the assistance of several members of the book committee. Furniture and shelving were bought and the library was opened to the public in December, 1901. A number of private donations of books were made, so the library opened with 2,090 books.

In April, 1902, on account of increasing patronage, it was deemed advisable to keep the library open three days in the week, instead of two, as formerly. In July, Mrs. Ida B. K. Head, was elected librarian.

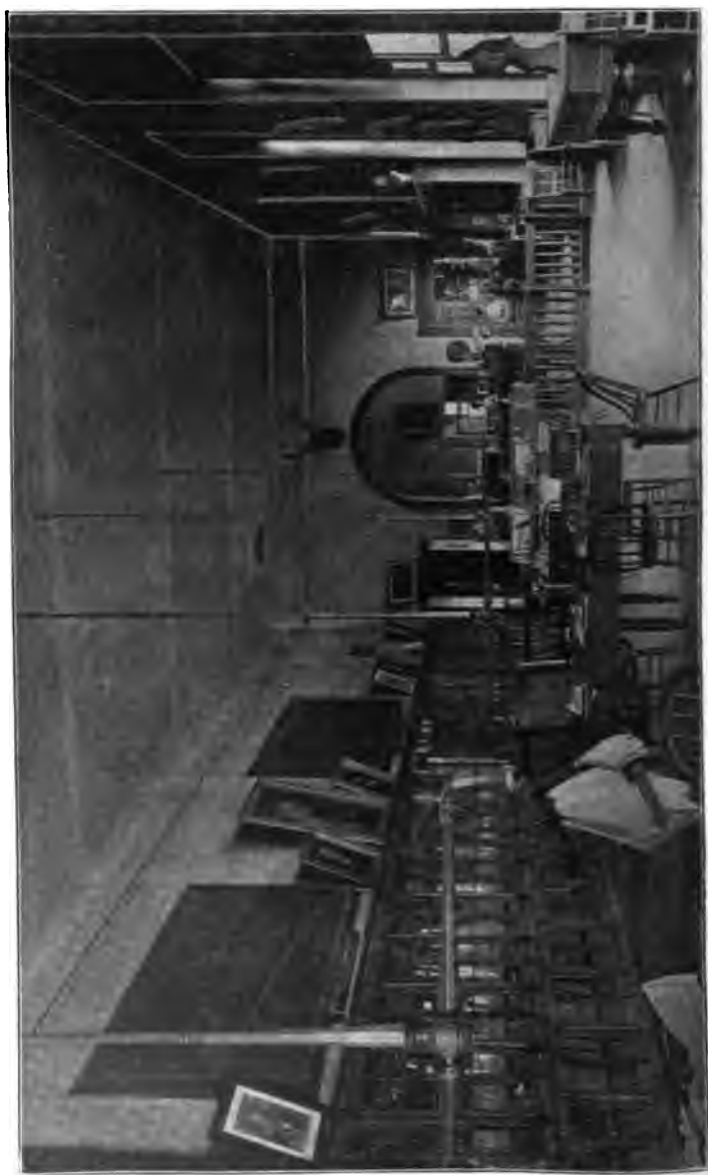
In April, 1903, Mr. Henry Haag, a member of the library board and city council, received a letter from Mr. Carnegie's secretary, stating "if the city council of Jefferson would furnish a suitable site for building and agree to raise \$1,000 per year, for maintenance, Mr. Carnegie would be pleased to give \$10,000 for a free public library building."

The council having no available funds with which to purchase a lot, a subscription paper was circulated, and \$1,500 was pledged to buy a lot one block west of the Public Square. The conditions of the gift having been complied with, Hallet & Rawson, of Des Moines, were employed as architects, and the new building will be completed within a year.

The library in its present quarters, is enjoying a steadily increasing patronage, with a circulation of over one thousand books per month. Since its organization, nearly two years ago, 526 books have been added by pur-



KEOKUK PUBLIC LIBRARY—GIFT OF CITIZENS.



KOOKUK PUBLIC LIBRARY-READING ROOM.

chase and donation, making a total of 2,626 books, and when the new library is completed, sufficient money will be in the treasury for the purchase of a large number of new books.

KEOKUK.

The Keokuk Library Association was incorporated December 10, 1863, as a stock association. Shares of stock, \$10; life membership, \$50; annual dues, \$2; subscribers, \$3.

The library was first opened for delivery of books June 1, 1864, with four life members, 181 stockholders and about two thousand five hundred volumes on the shelves. The increase in the number of books first year was 1,000; second year, by purchase and donation, about one thousand five hundred.

For a number of years the association conducted a lecture course, deriving the most of their income from that source and from entertainments given by the ladies of the city. The officers of the association the first year were A. J. Wilkinson, president; Geo. W. McCrary, vice president; Geo. C. Thompson, recording secretary; Howard Tucker, treasurer. Directors, A. Hagny, Wm. Fulton, Robt. F. Bower, P. Gibbons, Rev. Geo. Thacher and J. Lothrop Rice.

In 1879 J. L. Rice, dying, left a bequest of \$10,000 to the Keokuk Library Association, which was the nucleus of a fund for the erection of an excellent library building. The ladies gave an art loan exhibition, netting about eleven hundred dollars and a large number of shares of stock, with privilege of free use of library for ten years, were sold and a sufficient sum realized to enable the association to erect a building costing \$25,000, being the first library in the State to have a home of its own. The library was opened to the public in their new building on February 24, 1883. The library is on the second floor, the first floors being rented and used for business purposes.

On the completion of the building the association found themselves in debt \$5,000, which amount was loaned to them by H. C. Huiskamp for ten years, without interest. This debt was reduced \$500 annually from rents of rooms on first floor of building.

Mr. H. C. Huiskamp and Mrs. Spencer Grennell made donations of \$500 each and Mr. A. L. Connable cash and lands realizing about one thousand dollars. The association had a long hard struggle to free themselves from debt and maintain the library and were compelled to make frequent appeals to the public for donations and in the way of entertainments.

In May, 1892, the association was able to announce that it was free from debt.

In the beginning of 1894 the subject of a free public library was discussed, and on April 2, 1894 the citizens voted favorably on the proposition, "Shall the city of Keokuk accept the benefit of the statute for the creation and maintenance of a public library."

The board of directors of Keokuk Library Association then submitted to the city council a form of lease, to the city of Keokuk, of the library building, books, furnishings, etc., for a term of eight years from May 1, 1894, upon condition that the city should appropriate annually, not less than \$1,500 for the support and maintenance of the library and the care and pro-

tection of the building and for its use as a free public library, which was adopted unanimously.

This lease has since been renewed for a term of years, the minimum appropriation being \$2,000 per annum.

The library was opened for the use of the public as the Keokuk Public Library on July 16, 1894, with 9,370 volumes on hand.

In the first twelve months as a free public library, the users of the library increased from 383 (the last year of the association) to 2,494, and the number of books issued from 8,169 volumes to 52,333 volumes.

The library was closed from August 6 to November 19, 1900, during which time some long needed improvements were made, at a cost of about two thousand dollars.

The Dewey System is used in the classification of the books, and much progress has been made in the preparation of a dictionary card catalog, some of the cards used being printed ones, furnished by the Library of Congress and American Library Association, and others written in the library. The librarian has attended two sessions of the Iowa Summer School for Library Training under the auspices of the Library Commission.

Since its opening as a public library the board has been enabled to add largely to the list of reference books.

The circulation for the year 1902 was 50,397 volumes.

No record is kept of the use made of the reference books in the library, and it will be readily understood that the number of books issued give but a partial estimate of the real usefulness of the library.

The number of volumes in the library January 1, 1903, was 13,764.

The present members of the board of trustees are, John E. Craig, president, W. J. Fulton, secretary, Samuel E. Carey, E. F. Tobin, Lindsay Merrill, Wm. Reimbold, Rice H. Bell, Frank Le Bron, Ben B. Jewell.

Miss Nannie P. Fulton, librarian.

LEMARS.

In 1876 Mrs. P. F. Dalton and others organized a library association which acquired a number of books by donation from the citizens of the town and an invoice of \$100 by purchase.

The library thus founded was provided with such temporary headquarters in business buildings and attended by members of the association who volunteered their services, or by persons employed for a limited number of hours each week, until 1885, when by a vote of the electors at the annual city election the city assumed control of the same and from thence on until the enactment of the statute of 1894 remained under the direction of committees appointed from the city council.

After the organization of the board of library trustees on the 2d of July, of the year last named, and to the present time the library has been kept in the second story of the building occupied for general city offices, and, under the direction of the trustees, attended regularly by persons employed as librarians.

The last report of the president of the board made to the city council shows that at the beginning of the year, 1902, there were 4,520 books on the shelves—added during the year, 520; circulated, 12,067.

During the same year there were 1,140 regular readers enrolled.

Last April Andrew Carnegie announced the making of a donation of \$10,000 for the erection of a library building and the citizens within thirty days thereafter purchased and donated to the city a site for the building at a cost of more than \$2,000.

An architect has been employed and plans completed for a building of pressed brick and stone.

The members of the present board of trustees are as follows: J. T. Martin, president; P. Farrell, secretary; Mesdames P. F. Dalton, Bush, Pen, Sarton, Cole, Messrs. Boyd and Thomarson.

Librarian, Miss Mollie Brown.

LEON.

Through the earnest efforts of the Woman's Club of Leon, a library was established in 1901, and their labors were unceasing in securing funds for the purchase of new books and the support of the library. Those most closely identified with the work, however, felt that the free use of the books, which would be possible if the library was maintained by a municipal tax, was an object greatly to be desired, hence efforts were put forth by the club to this end.

At the spring election, March 31, 1903, the question, "Shall a free public library be established," supported by municipal tax was submitted to a vote of the people, and resulted in a majority in favor of the measure. The Woman's Club, therefore, will turn over to the city their collection of over one thousand one hundred volumes.

The following trustees have been appointed by the mayor: Mrs. M. Layton, president; Miss Charlotte Vogt, vice president; Mrs. L. P. Sigler, Mrs. J. F. Hamilton, John W. Harvey, J. R. Bowsher, Geo. E. Hurst, Geo. W. Baker, V. R. McGinnis.

Librarian is Miss Ida Brooks.

MAQUOKETA.

Early in the fifties a number of intellectually inclined people in the little village of Maquoketa formed a reading circle, which was known as the "Maquoketa Literary Society." These people met frequently and had little programs or readings for mutual benefit and pleasure. A little later, at the instance of Mrs. Pierce Mitchell and Miss Charlotte Walker, a ladies' sewing society was formed, which worked avowedly for the purpose of obtaining money for books to form a city library. As a result of the work of these two organizations, if not directly out of them, there grew an organization, which began in 1857, as a regular corporation under the name of the "Maquoketa Literary Association." The stockholders each subscribed ten dollars and were issued one share of stock, and a regular constitution and by-laws was adopted. The little collection of books gathered together by the early members of the association was placed in charge of some one of the number as librarian and loaned to subscribers under certain regulations. At the time the civil war commenced the library was housed in the general store of Pierce Mitchell on the corner of Main and Platte streets. Otis

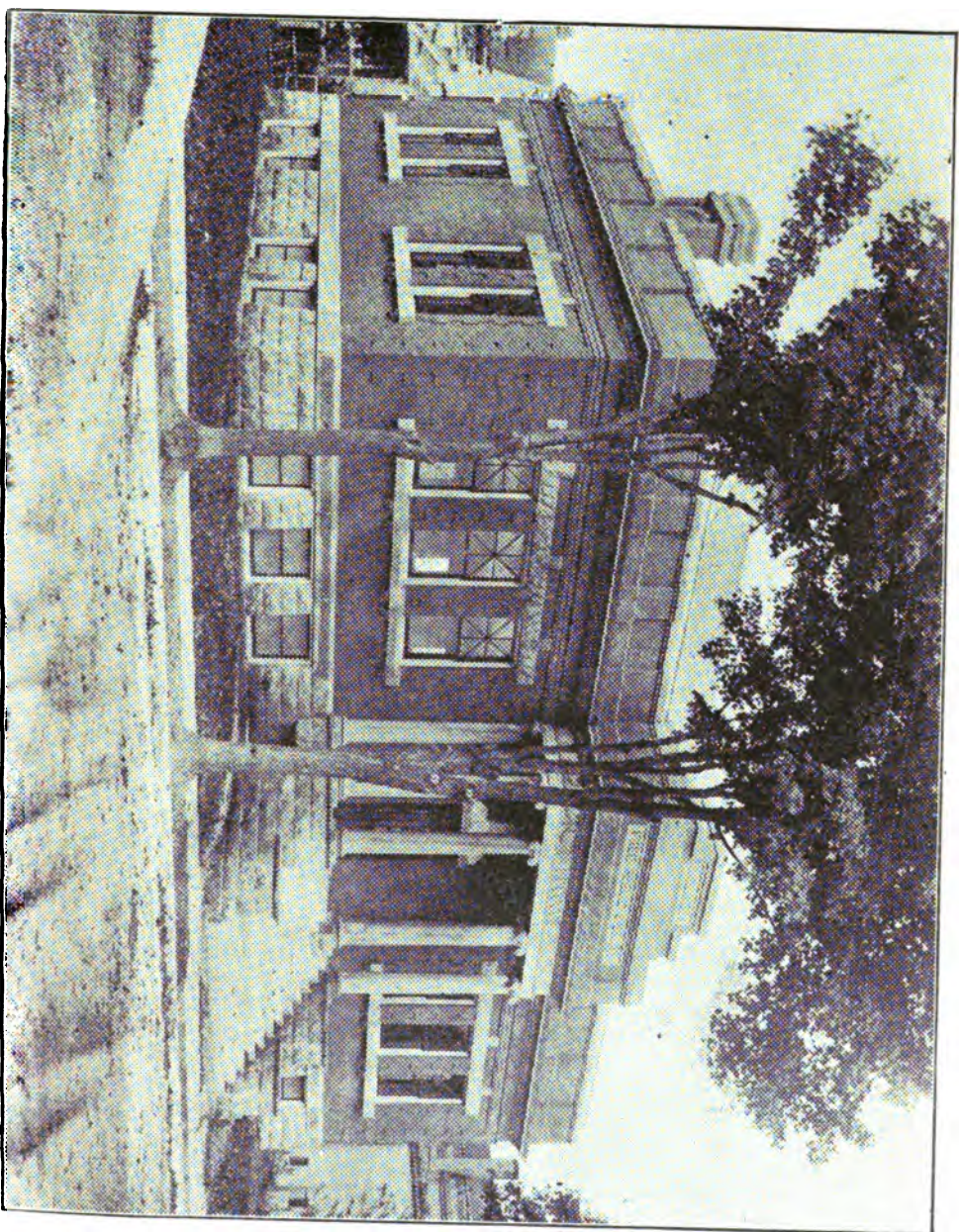
Crawford, an assistant in the store, was the librarian, but the war spirit entered his soul and he enlisted, leaving his charge uncared for.

Not for long, however, for William Cundill, an English tailor who loved books, secured from the trustees permission to take the books to his shop and there look after the library. This he did until 1874, when Mr. Cundill returned to his old home for a three years' visit, leaving his charge with Attorney R. W. Henry, and upon Mr. Cundill's return in 1877, he again resumed his position as librarian. At this time the library was steadily growing both in the number of volumes and the patronage. So far as the records show, the last meeting of this association was held on April 20, 1885, and at that time the collection of books numbered about seven hundred.

In the meantime William C. Boardman, a man of some property, who lived in the city, had made a will giving first \$2,000 and afterwards \$3,000 more to found a library for the people of Maquoketa on the condition that it should bear the name of the Boardman Library Institute, and be a regular incorporation with a capital stock of not less than \$5,000. Upon the death of Mr. Boardman in 1884 the promoters of the library movement saw an opportunity to greatly enlarge their library and its efficiency, and after a good deal of labor the required stock was subscribed and the Boardman Library Institute was in possession of \$5,000, one fifth of which it was to spend at once for books.

Those interested in the new organization were for the most part the same people who had built up the literary association, and consequently on April 20, 1885, they met, and voted to give all their books and property to the institute on condition that they be given stock in it. This was satisfactorily arranged, and from that time the library has been a great educational factor in the city, albeit it had no home of its own, and being a subscription library its patronage was necessarily limited. At the present time the Boardman Library Institute possesses about four thousand volumes and has in the neighborhood of one hundred and fifty patrons. It is proposed to house these books in the new building under a contract with the trustees of the Free Public Library.

Some years ago, Dr. D. N. Loose, who had been among the foremost of the workers for a public library purchased the lot at the corner of Pleasant and First streets, for the purpose of some time making it a library site. When it was learned that Mr. Carnegie was making gifts for libraries a movement was set on foot to ask for such a gift for Maquoketa and when \$10,000 was offered on the usual conditions, Doctor Loose and C. F. Goller started out to raise a subscription to purchase a site. It was accomplished, Mayor W. M. Stephens at once appointed a board of trustees, consisting of Messrs. W. H. Hand, C. F. Goller, D. N. Loose, W. B. Swigart and J. P. Gruwell, and Mesdames W. M. Stephens, C. A. Gallagher, A. B. Bowen and Julia B. Dunham, who held their first meeting May 26, 1902, and elected W. H. Hand, president; Mrs. C. A. Gallagher, vice president; C. F. Goller, Secretary, and Mrs. A. B. Bowen, corresponding secretary. The gift was formally accepted and Netcott & Donnan of Independence, chosen as architects. Bids were called for and Hancock & Thomas, the local contractors, secured the contract. Later an extra \$2,500 was received from Mr. Carnegie, making



MAUNOKETA PUBLIC LIBRARY-CARNEGIE BUILDING.

the total of the gift \$12,500. When completed and furnished, the building and site will have cost over \$16,000.

The librarian attended the Iowa Summer Library School for 1903, under the auspices of the Iowa Library Commission.

MANCHESTER.

As the history of a nation is divided into periods, so the records of most events take similar form; thus this library of Manchester did not take its present form at a single bound, there were small beginnings.

In the year 1867 a number of our citizens met and organized "The Library Institute;" the records are lost. This collection comprised over two hundred volumes, standard works. About the year 1877 this library was passed over to the School District for the benefit of the High School. That was one of the sources of the present library, having been presented in the year 1883 or '84 to a kindred association.

In Manchester in March, 1883, a meeting of ladies was called to consider the matter of establishing a "Public Reading Room," that might be a "stepping-stone" to a "Public Library." A constitution was adopted, the name of the organization to be "The Manchester Reading Room Association," its object the maintenance of a free public reading room. Conditions of membership were signing the constitution and the payment of \$1. Increase of membership and entertainments established a fund sufficient to furnish a room, secure reading matter that was soon increased by donations. The work progressed and in a few weeks the room was open to the public. This was in the spring of 1883. Just before the close of the year the Association decided to confer with the city council in regard to organizing a "Free Public Library," resulting in the passing of an ordinance by the city council providing for the establishment and government of such a library. Their funds were the proceeds of tax levied for its support.

In April, 1884, the library commenced loaning books, and in less than one year's time had 326 bound volumes, besides reference books and 247 volumes of bound and 165 of unbound Public Documents, 498 volumes of magazines and periodicals. The reading room supplied twenty weekly and monthly papers and magazines. At that time there were 495 registered patrons of the library. These books were placed in the reading room, the association assumed all the expenses of running the library in connection with the reading room for one year, in order that all the library funds might be expended in books. Time passed, the societies working in harmony. The city council unobserved took note of the success, and a tax was levied, and in 1885 a fine brick building was erected, and in the winter of that year both societies took possession of the rooms assigned them by the council. This was a great day, for the town had the nucleus of a library and a building of its own. The association assumed most of the running expenses for two years and continued furnishing papers and periodicals. The Traveling Library of the Iowa Library Commission has been used since 1898 to augment the collection of books.

In 1894 the association offered to turn over all its property to the library (except piano), the cash in hand, \$124.89, in consideration of the city authorities agreeing to keep the room open, and in as good order as heretofore; this was accepted.

In 1902 Mr. Andrew Carnegie made the offer of \$10,000 to build a library with his usual provisions. This was accepted, and the following building committee appointed to select site and solicit funds: Rev. H. W. Tuttle, G. G. Pierce, L. Matthews, Judge A. S. Blair, W. D. Hoyt.

Ten days passed, \$3,200 raised, site chosen, and deed in the hands of the council. Preparations for building followed. In March, 1903, "The Free Public Library" was moved into its new quarters.

The cost of the lot, building, furniture and fixtures was \$13,500.

The library now contains 4,300 bound volumes and over one thousand pamphlets. The library is open every week day, afternoon and evening, and is under the care of Mrs. Jennie Jones, librarian, who has served for over eight years in this position.

The members of the present board of trustees are as follows:

E. B. Stiles, president, Miss Idell Miles, secretary, H. W. Tuttle, Mrs. W. H. Norris, Mrs. E. J. W. Tirrill, S. A. Steadman, G. G. Pierce, A. Hollister, A. H. Blake.

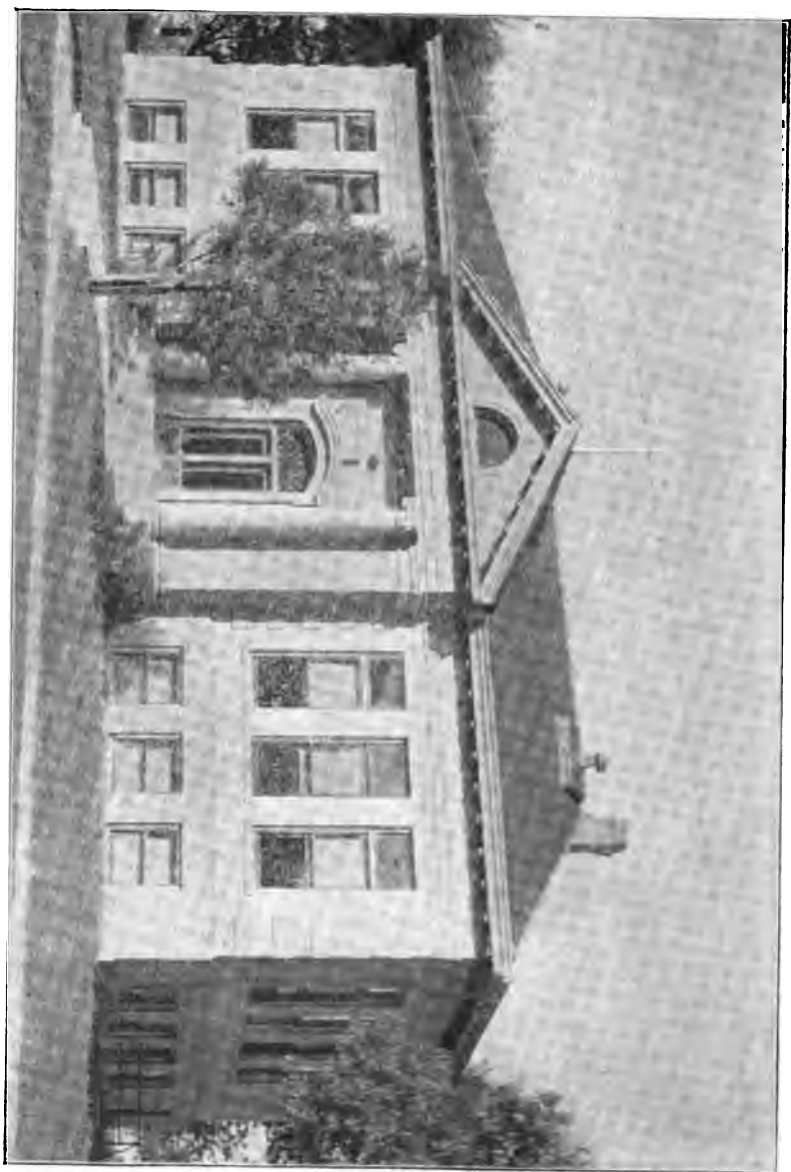
MARENGO.

Early in 1903 a proposition was made by Mr. Carnegie to erect a library building for Marengo to cost \$10,000, on the conditions that the city council should furnish a suitable site and provide an annual income of not less than \$1,000. Inasmuch as no public library existed in Marengo, it was necessary to vote upon the question of establishing and maintaining a free public library by municipal tax, as provided by the State law, before the council could act upon the offer. The result of the vote was in favor of the library, and the gift was accepted. The mayor appointed the Board of Library Trustees, who met and organized, as follows: M. A. Raney, president; Henry Gode, vice president; C. H. Carson, secretary; W. C. Schultz, J. J. Glenn, J. B. Murphy, Mrs. Frank Cook, Mrs. A. M. Henderson, Mrs. M. W. Stover.

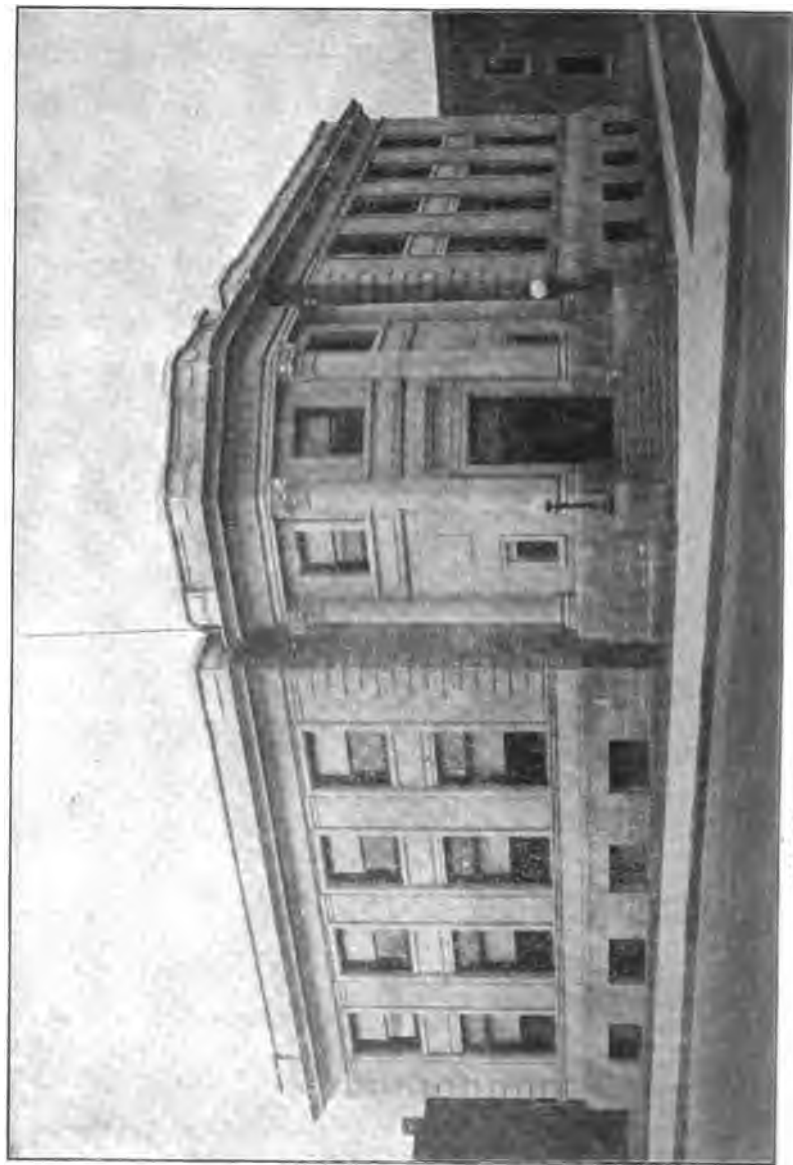
Plans for the erection of the building and the organization of the library will be pushed as rapidly as possible.

MARION.

The Women's Clubs of Marion, having organized a City Federation in 1901 for the purpose of establishing and maintaining a public library and reading room, have continued to provide for its support by various entertainments and other methods of raising money for its maintenance and growth. The Traveling Library of the Iowa Library Commission has been used to augment the collection of books since 1902. Early in 1903, Mr. Carnegie announced his willingness to erect a public library building for Marion to cost \$10,000, hence it was necessary for the electors of Marion to vote upon the question of a municipal tax for establishing and maintaining a library under the provisions of the State law. The Library Association of the City Federation, was most active in bringing this matter to a successful issue, having expressed their willingness to turn over their library consisting of about one thousand volumes to the city. The vote was favorable for establishing the library and the gift from Mr. Carnegie has been accepted, and steps will soon be taken for the selection of a site and the erection of a building.



MANCHESTER PUBLIC LIBRARY-CARNEGIE BUILDING.



MARSHALLTOWN PUBLIC LIBRARY - CARNEGIE BUILDING.

The members of the present board of trustees are as follows: J. T. Alexander, president; E. H. Alderman, Garry Treat, Mrs. W. Dobson, Mrs. Carl Owen, Mrs. B. C. Busby, Miss Emma Tyler, J. Bowman, Miss Adeliza Daniels.

Miss Mary L. Parkhurst has been the librarian since the inception of the library, and attended the Iowa Summer School for Library Training, which is conducted by the Iowa Library Commission.

MARSHALLTOWN.

In the winter of 1892 a mass meeting was called by the Marshalltown Woman's Club, to see if something could not be done toward starting a public library, at which a resolution was passed to appoint committees to solicit funds for the purchase of books; if the committees could raise \$1,500 the opening of a library was to be undertaken, if not the project was to be abandoned.

The specified sum was quickly raised and the ladies decided they would secure \$1,500 more, to be kept at interest; \$3,400 was subscribed and a stock company was formed known as the Marshall County Library Association, \$5 constituting a share of stock. Ten people each had \$100 worth of stock, others in lots of \$50, \$25, and less.

The county gave the use of a room in the court house, including light and heat. \$1,000 was at once expended for books and \$500 more during the first year.

Mrs. M. P. Scheeler was secured as librarian, the library to be kept open two afternoons each week, Wednesdays and Saturdays.

Book cards were sold to stock holders for \$1.50 per year, and to non-stock-holders for \$2.50.

This income with the interest money and receipts from entertainments which the ladies gave each year, supported the library and added about five hundred dollars worth of books annually.

In 1898 the association offered to give the library of nearly four thousand volumes and \$1,500 in money to the city if the people would vote a tax to maintain it as a free public library.

The City Federation, with Mrs. A. M. Parker, president, did excellent work in cultivating public sentiment and getting the women out to vote.

August 8, 1898, the transfer was made; a large room secured in a business block; Mrs. Scheeler was elected librarian.

September 3, 1898, the library was opened as a free public library, with hours from 9:30 A. M. to 6 P. M. daily.

In April, 1899, Mrs. M. M. Battis succeeded Mrs. Scheeler as librarian.

January, 1902, the trustees received from Andrew Carnegie the promise to give to the city \$25,000 for a library building with the usual stipulations. A request was sent him for \$5,000 more, which was immediately granted.

The city furnished a corner lot 90 by 75 feet. Patton & Miller of Chicago secured as architects; J. F. Atkinson, Marshalltown, contractor.

April 22, 1903, the building was dedicated with appropriate exercises in the Odeon Theater and opened in the evening for a public reception.

The library building is a model of convenience and beauty. The first floor contains reading room, children's room, study, librarian's room, stack and delivery rooms, and rotunda.

The second floor has a lecture room with a seating capacity of 175, trustees room, lavatory, and a museum which was fitted up and furnished by Mrs. C. H. Conover of Chicago, in memory of her father, Hon. H. E. J. Boardman.

Dr. W. S. McBride, the senior trustee, has given to the library museum a collection of about three hundred and fifty geological and paleontological specimens and about the same number of crinoids.

A. E. Wilbur a fine collection of shells, and Mr. Hubler an equally fine collection of native and exotic birds' eggs.

A loan collection of rock crystals has been placed in two cases by Mr. Kane.

The basement has a stack room, newspaper room, toilet rooms, boiler rooms, etc.

One thousand three hundred seventy-seven dollars and twenty cents was given by clubs and individuals to purchase the furniture of the library, besides many articles.

The library numbers 10,000 volumes; the circulation of books during the year 1902 was 43,059, and of pictures 1,176.

The circulating department is open from 9:30 A.M. to 8 P.M. daily, except Sundays and legal holidays, when the reading room and museum are open from 2:30 to 5:30 P.M.

The members of the present board of trustees are as follows: Mrs. H. J. Howe, president; Mrs. A. M. Parker, secretary; F. R. Benedict, P. S. Balch, Mrs. Joseph Holmes, Dr. W. S. McBride, W. L. Place, A. C. Daly, Mrs. I. L. Cady.

Mrs. M. M. Battis, librarian.

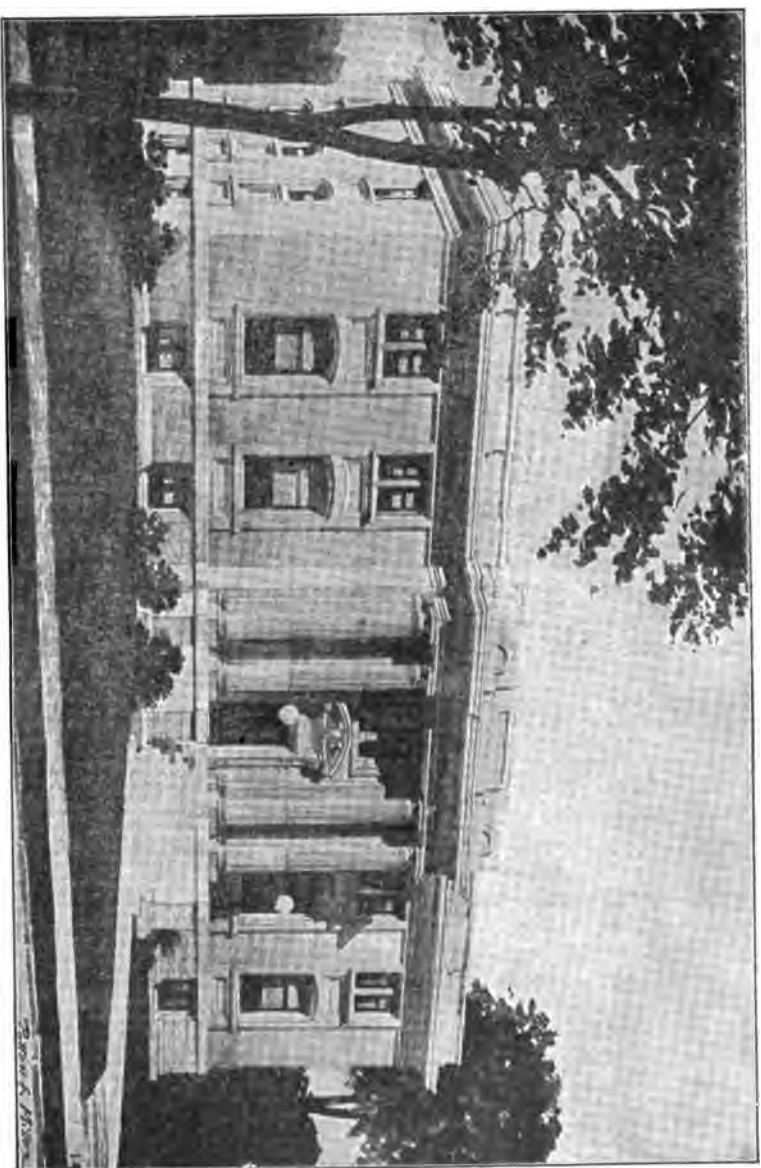
MASON CITY.

Early in the year 1871 a number of people were aroused to the need of providing something to counteract the influence of the open saloons and an organization was formed called the Occidental Library Association, the membership fee being \$5 with annual dues of \$3. In April of the same year they reported a library of 300 volumes which were housed in a book store and later in a bank and cared for by volunteers, a number of whom were untiring in their devotion to the work.

But in time the organization dwindled away and many of the books were worn out or lost.

In 1887 a new organization was formed and money raised by donations and entertainments for the purchase of books. The books belonging to the old organization were at first loaned and afterward given to the new association. These books were rented at 5 cents per volume. A dwelling house on Main street was rented and Miss Mary Hurlburt secured as librarian. In 1892 an old store building was purchased, the advance payment being loaned by members of the association and a mortgage for the remainder placed on the property.

In 1893 a library tax was voted by the citizens and the building was decided to the city and the affairs of the library placed in the hands of a corporation. In 1895, by a change in the laws of Iowa, the control of the library was given to a board of trustees appointed by the mayor.



MASON CITY PUBLIC LIBRARY-CAMBRIDGE BUILDING.

The number of volumes slowly grew, the interest in the reading room resulted in many gifts, and the debt was decreased.

In the spring of 1889 occurred the death of the librarian, Miss Hurlburt, to whose faithful, self-sacrificing efforts the library owes much of its value. She was succeeded by her sister, Mrs. Anna H. Chapin, who is the present librarian.

During the summer of 1899, the trustees secured the services of an organizer to catalog the library and classify it by the Dewey system.

In July, 1900, the building owned and occupied by the library was destroyed by fire. This resulted in the sale of the property and the purchase of a residence property situated in a very choice location for library purposes, being opposite the school buildings, and so surrounded by public buildings as to be free from any danger of being crowded by the advance of the business portion.

In 1902 a donation of \$20,000 was secured from Andrew Carnegie and a movement to raise a fund of \$10,000 among the citizens by subscription was inaugurated and carried to completion.

The architects, Patton & Miller of Chicago, are preparing plans for the erection of a \$30,000 building which will be completed early in 1904.

During all this time the interest in the real work of the library has steadily increased and has been evidenced not only by the use of the library but by many valuable gifts of books, etc. The total number of volumes in the library January 1, 1903, was 3,329. The total circulation for the year 1902 was 17,462.

The members of the present board of trustees are as follows: Mrs. May H. McNider, president; Miss Addie Barton, Mrs. Elizabeth Hanford, Mrs. S. D. Allen, Mrs. Cora H. Kotchell, Dr. T. T. Blaise, J. H. McConologue, J. S. Mott, W. J. Holahan.

MISSOURI VALLEY.

The Missouri Valley Library Association was incorporated May 11, 1881, and opened a library to the public. For many years this was supported by the sale of tickets and weekly book rentals. An entertainment was given occasionally, or a supper, to raise additional funds. In March, 1898, the trustees decided to petition the city council to establish a free public library. The trustees agreed to give all the books and library property to the city when such a free public library should be established. The proposition carried by popular vote at the city election in March, 1899, and the trustees transferred all their property to the city. In this manner the library became the Free Public Library of Missouri Valley. It is open on Wednesday and Saturday afternoons and evenings of each week and has about 2,300 volumes.

The library is well patronized and the children especially are regular and interested visitors. The trustees are particularly watchful of the character of books provided for the children, seeking to interest them in travels and natural history and science to partial exclusion of fiction.

The library is greatly hampered by lack of room. It is located in one rather small room in the city building. The trustees are B. W. Carlisle, president; Clara A. Davis, secretary; Mary E. Boles, Clara C. Lahman, Helen E. Moore, Nellie Hills, C. W. Kellogg, Horace Warren, Wm. H. Fensler.

Miss Estelle Turner has served as librarian for a number of years.

MONTICELLO.

The Monticello Free Public Library was established by vote of the people at the spring election of 1903. A correspondence carried on by Rev. C. C. Warner secured from Mr. Andrew Carnegie the offer of \$10,000 for a library building upon the usual conditions. After the election the city council guaranteed the \$1,000 annual support and purchased the site for the building. A former resident, Mrs. Clara Wales Stout of Chicago, then proposed to the city the donation by herself of the site as a memorial of her mother, Mrs. Calista Wales, stipulating that the city should set aside for a book fund a sum equivalent to the purchase price of the lot and the buildings thereon. This fund amounts to \$2,048.

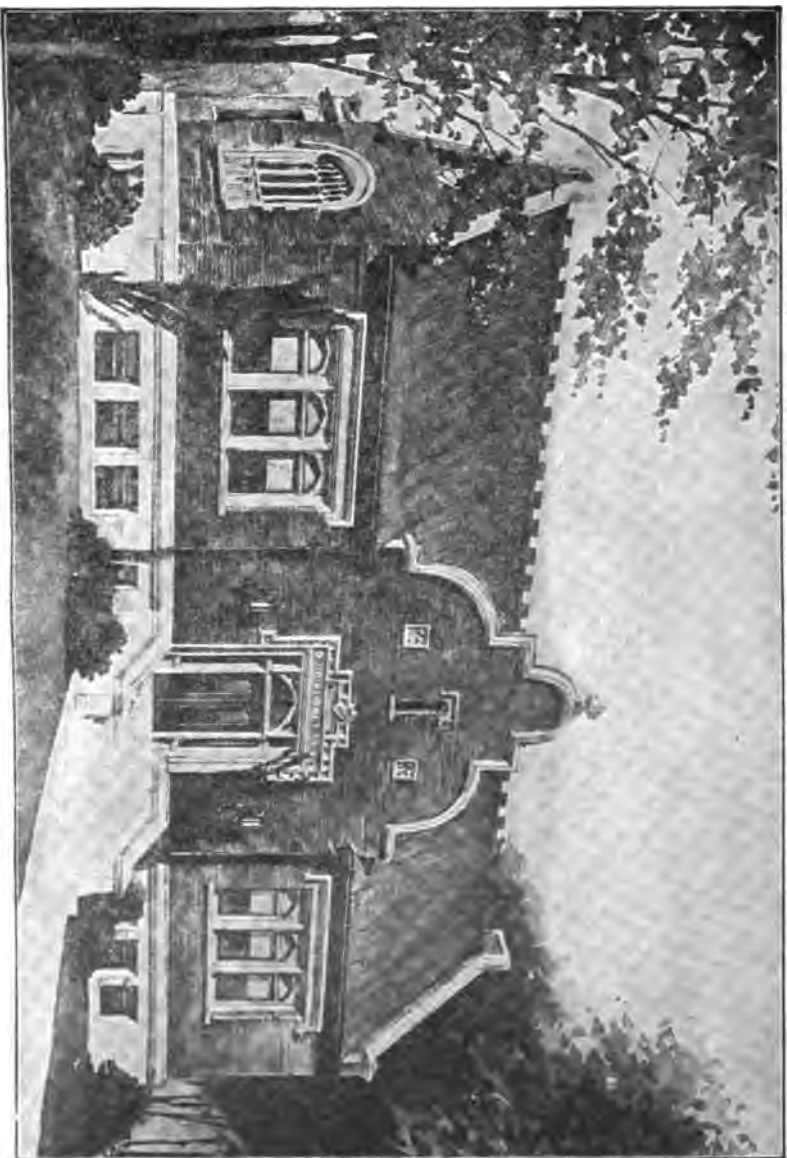
The library board appointed by the Mayor and council is as follows: President Hon. S. S. Farwell, vice president, Dr. W. W. Hunter, secretary, Rev. C. C. Warner, treasurer, E. E. Hicks and Mrs. W. A. Mirick, P. H. Connor, Mrs. C. D. Chase, Mr. Louis Lang, Mrs. O. C. Hunter. Librarian, Miss Mary Marvin.

The building committee is S. S. Farwell, C. C. Warner, and P. H. Connor. The architects are Patton & Miller of Chicago. Completion of the building is hoped for early in 1904. The building will be of selected sand mold common brick trimmed with Bedford cut stone. The interior arrangement is on the open shelf plan, utilizing all the walls of the building with a stack room in alcoves. The plans are believed to provide the very best arrangement possible, and the combination of utility and economy with artistic taste promises excellent results.

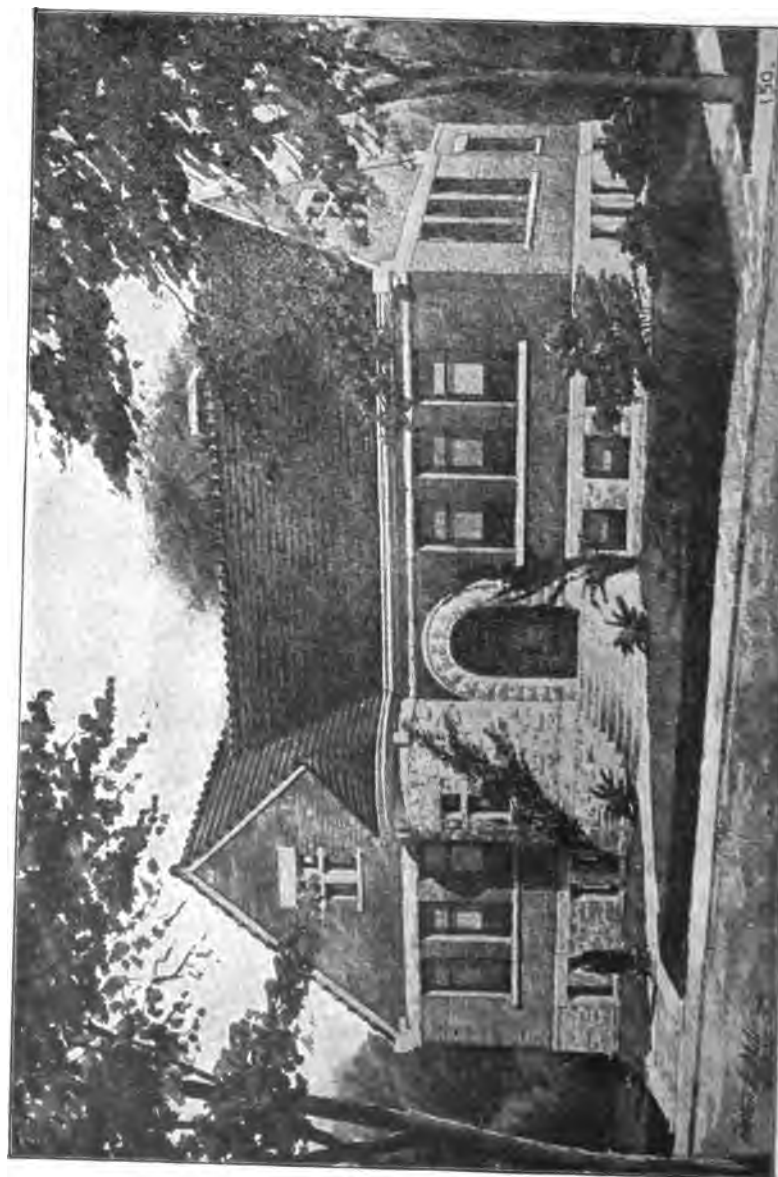
MOUNT PLEASANT.

Mount Pleasant has had a library for more than twenty-five years, but far too large a part of that time it was not free. The library was established by the Ladies' Library Association, which was the outgrowth of a reading and study club. This association was incorporated in 1875, and immediately began to take steps to found a library. The library was opened to its subscribers shortly afterwards. A low fee was charged for the privilege of taking books out, but the reading room which was maintained also, was open to the public entirely free. Repeated efforts were made during the library's existence as a subscription library to have the city vote upon the question of maintaining a free library. This was not successful until 1901. In the meantime the Library Association had kept their library open on the regularly appointed days, never having missed doing so except when necessary to remove the books from one site to another, which was done three times. The library grew in that time from a small collection to about six thousand books, including pamphlets and works of reference. The books for circulation numbered between two and three thousand, and were, especially, in the case of fiction, selected with the greatest care.

After the question of maintaining a library was carried, the Library Association generously offered to the city council its collection of books as the nucleus for its free library. This proposition was accepted in the spirit in which it was offered. Within a few months after turning over this library to the city, the announcement was made that Mr. Carnegie had offered \$10,000 to the city for a library building with the usual conditions



MONTICELLO PUBLIC LIBRARY—CARNEGIE BUILDING.



MOUNT PLEASANT PUBLIC LIBRARY—CARREBOIR BUILDING.

attached. The city not being in a condition to furnish the site, an energetic movement was at once inaugurated to procure a desirable site by subscription from the citizens. The Library Association headed this with a subscription of \$1,000, and generous citizens quickly responded with the balance of the \$3,000 needed to purchase one of the most desirable sites in town, that known as the Bird corner, from the fact that one of Mount Pleasant's most respected physicians, Dr. Wellington Bird, lived for many years on the spot.

The first board of trustees appointed by the mayor, Hon. Joshua G. Newbold, were Judge W. I. Babb, president; Mrs. W. Beckwith, George E. Throop, W. E. Keeler, William Worthington, F. S. Finley, Miss Emma Schwenker, Miss Mary Snyder, Mrs. Lou Janes. Four of this board were active members of the Ladies' Library Association, whose efforts made it possible for the free library to make a beginning with a large collection of books. Mrs. Janes, who desired the position of librarian, resigned from the board and Miss Lucrode was appointed in her place. Mr. George Throop removed from the city, and that vacancy was filled by the appointment of Mr. W. B. Seeley. The library has been opened since May 1, 1902, as a free library, opening each afternoon and evening of the week except Sunday.

The building committee, who have charge of the erection of the Carnegie building, are: W. B. Seeley, chairman; with Judge Babb, W. D. Worthington, W. E. Keeler and Mrs. Beckwith. The building is expected to be ready for occupancy in August, 1904.

MUSCATINE.

In November, 1896, some of the citizens of Muscatine met at the home of one of the pastors of the city to talk over the subject of a public library. As a result, on December 16, 1895, another meeting was held in the old Congregational church, where a course of six lectures for raising funds for this purpose was decided upon, and on the evening of January 18, 1897, the first meeting was held in the High School building, when Professor Sparks gave the first lecture, on the subject, "The Men who Have Made the Nation."

On January 26, 1897, the "Lecture and Library Association" of Muscatine was organized and a constitution adopted. Fifteen directors were chosen, three of whom, viz: Hon. G. M. Titus, Mrs. E. L. Mahin and Mrs. E. L. Jayne, are members today of the board of trustees of the new library.

The first books were kept in a room in the High School building, under the care of Mrs. E. L. Mahin, the present librarian in the new edifice. When it became known that Mr. Musser was to donate a library building and the question of a tax-supported library was voted upon favorably, the books were transferred to the new institution.

On Friday evening, December 20, 1901, the P. M. Musser Library building, the gift of P. M. Musser, one of the oldest citizens of Muscatine, to the city, was formally dedicated and by Mr. Musser transferred to the city. In spite of the severe cold weather, the attending crowd was so large that the exercises were held in the large Methodist church, on the opposite side of the avenue, after which the building was thrown open for inspection, and until

a late hour crowds of interested and happy people passed its doors and admired its beauty.

The building is practically seventy feet square and is two stories in height, with a basement. The sub-structure is of Portage red sandstone. The roof is of tile. The windows in the peristyle are all of cathedral glass, six of an ornate oval form, and the large one in the west a perfect square, giving an effect within of perpetual sunshine. The general reading, delivery room, children's and stack rooms, and the trustees' room are furnished with oak tables and chairs, and are finished in oak.

The upper story contains a lecture room, art gallery and trustees' room. The lecture room is seated with opera chairs. In the basement is a large room for the storage of books, magazines and papers, among the latter being a complete file of the *Muscatine Journal*, first issued as the *Bloomington Herald*, in 1840. The building was erected and furnished by Mr. Musser at a cost of nearly fifty thousand dollars. It is a credit to the donor and Muscatine citizens are proud of it.

The library was organized by Miss Zoe E. Faddis, from the School of Education, Chicago.

The members of the present board of trustees are as follows: Hon. G. M. Titus, president; Mrs. Ella Jayne, vice president; J. G. Van Lent, secretary; C. R. Musser, treasurer; Hon. I. B. Richman, Mrs. E. L. Mahin, W. C. A. Busch, W. D. Burk, S. G. Stein.

Mrs. E. L. Mahin, is the librarian, and attended the Iowa Summer Library School during the summer of 1901. Two other members of the staff have also attended the school.

NASHUA.

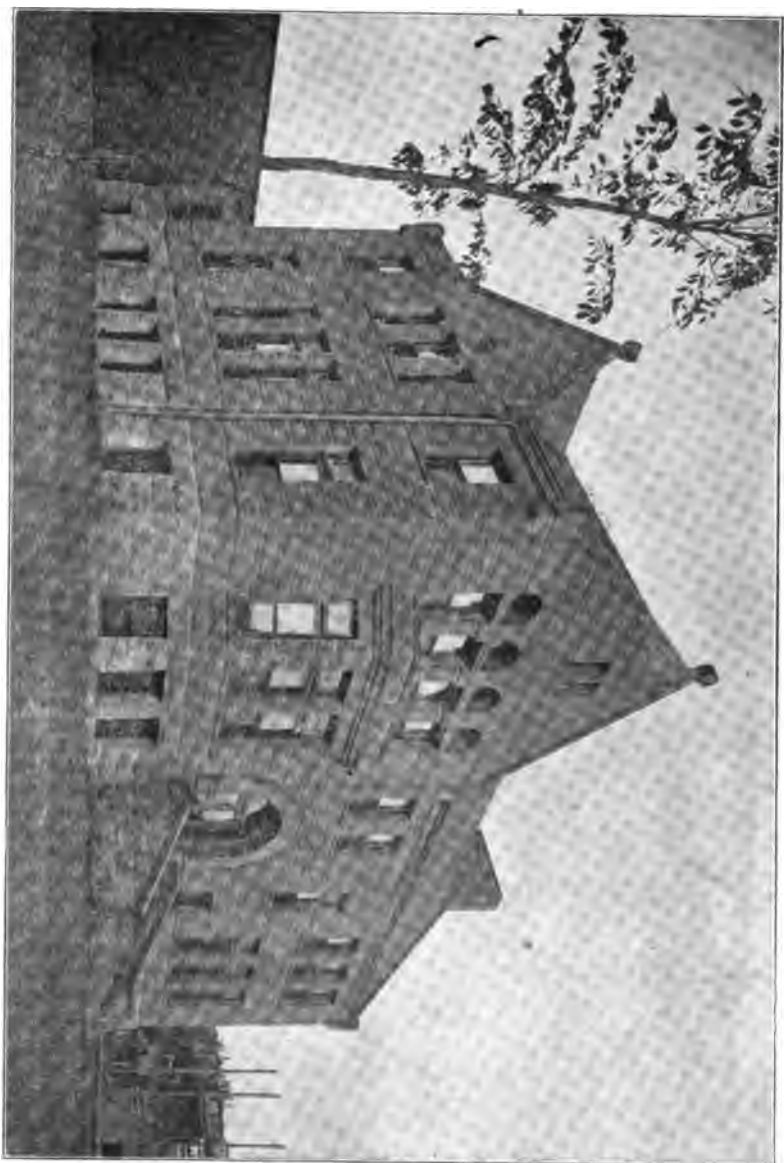
The movement to organize a free public library in Nashua was started late in the summer of 1901 by two women's clubs of the town. A "book shower" was given in the opera house where an entertaining program concerning library work was provided and every person attending gave one or more books. Afterwards books and funds were solicited in the town and country adjoining, the use of a room was obtained and the library and reading room was opened to the public in October, 1901. During the first eight months the books and room were entirely cared for by the members of the women's clubs.

In March, 1902, the vote for city tax for library support was carried by a large majority, and until the income from this was available the expense of keeping up the room was borne by contributions from the business men of the town and others, and the proceeds of various entertainments given for the purpose. From the first the library has received a cordial support from the people of the town and the room has had a generous patronage.

A librarian has been employed for the past year and a committee from the women's clubs still aid in the work in many ways.

The library now contains a thousand volumes and many of the best periodicals are found on the reading tables. Special attention is given to the juvenile work.

During the past year seven thousand sixty-four books and nine hundred eighty-four magazines have been loaned from the library, which is open two days in the week. Collections of pictures have been made and loaned to the



MUSCATINE PUBLIC LIBRARY—GIFT OF P. M. MUSEER.



NEVADA PUBLIC LIBRARY.

schools and material furnished the teachers for programs for special days. Outlines of reading for different grades are furnished. The co-operation of our library and public schools has been one of the strongest features of our work. The greatest present need of the library is more room, the one now occupied, although pleasant and attractive, being too small for the best results.

The members of the present board of trustees are as follows: G. E. Ellison, president; W. R. Wright, A. E. Dye, Mrs. E. J. Graham, Miss Clara Currier, F. E. Fritcher, Mrs. P. E. Stewart, Mrs. C. L. Putney, W. B. Perrin. Miss Fannie V. Eastman, librarian.

NEVADA.

As early as 1875 a number of Nevada's thoughtful and earnest women began a movement for the establishment of a public library. A partial canvass for books as a nucleus was made, and a goodly list obtained by gifts and pledges. But, it being suggested that under the State law such an institution could be established and maintained by public expense, the influence of all interested was exerted to secure the larger and more permanent result, this being accomplished in the spring of 1876.

The proceeds of the tax levy were allowed to accumulate until 1879, then about four hundred books were purchased and the library formally opened to the public, W. W. Hunt having been appointed librarian.

Its book purchasing resources were early curtailed by a reduction of the tax levy, and for nearly a decade and a half the institution was conducted simply as a circulating library, with opportunity for taking out books but two evenings in the week.

In July, 1893, a Library and Reading Room Association was formed for the purpose of enlarging the scope and work of the library. Its membership reached 250. Its executive committee, co-operating with an appreciative and willing city council and library committee, rearranged the library and established therein a well furnished reading room, and the library was kept open every week-day afternoon and evening. Subsequently the board of trustees, created and given full control by the library law of 1894, have continued the same arrangements with slight modifications, and with most excellent results, having grown steadily in the number of books, in help and influence and in favor with the public. In 1900, a movement for a building was inaugurated by the gift of \$3,000 by Mrs. Lucy N. Silliman and children, in memory of her husband, R. J. Silliman, deceased. The building was completed and ready for use March, 1901, and is located on a handsome lot in the center of the town, and surrounded by an ample lawn. It is a substantial brick building. The basement is finished for a dining-room, and other uses, and is of great service. The first floor, or library rooms proper, is also completed and is very attractive.

The number of volumes now in the library is nearly five thousand. The valuation of building, grounds, furniture and fixtures and books, January 1, 1903, was \$13,550, the value of the books estimated at \$2,500.00. The library has been cataloged by Miss Mabel Colcord, of the State University library.

The members of present board of trustees are as follows: W. P. Payne, president; F. D. Thompson, vice president; Rose Murphy, secretary; Sarah J. Dillon, I. L. Smith, Jay A. King, Ed M. McCall, L. E. White. Librarian, Miss Kate E. Thompson.

NEWTON.

Newton's Free Public Library of 4,013 volumes and sixty periodicals is the outgrowth of a library instituted by the local W. C. T. U. in June, 1876. For seventeen years, a handful of self-sacrificing women conducted a public library and reading room, supported by individual contributions of money, books and periodicals. In the year 1895, the Newton Social Union succeeded to the management of the library and was very influential in causing the citizens to vote in March, 1896, for the establishment of a free public library as authorized by law, and for the levy of a tax for its maintenance. For three years this society labored to increase the number of books and when they last met, in October, 1898, the library contained 1,814 volumes. The organization of the Newton Free Public library, under the State law, was completed in July, 1896, by the appointment and confirmation of nine trustees.

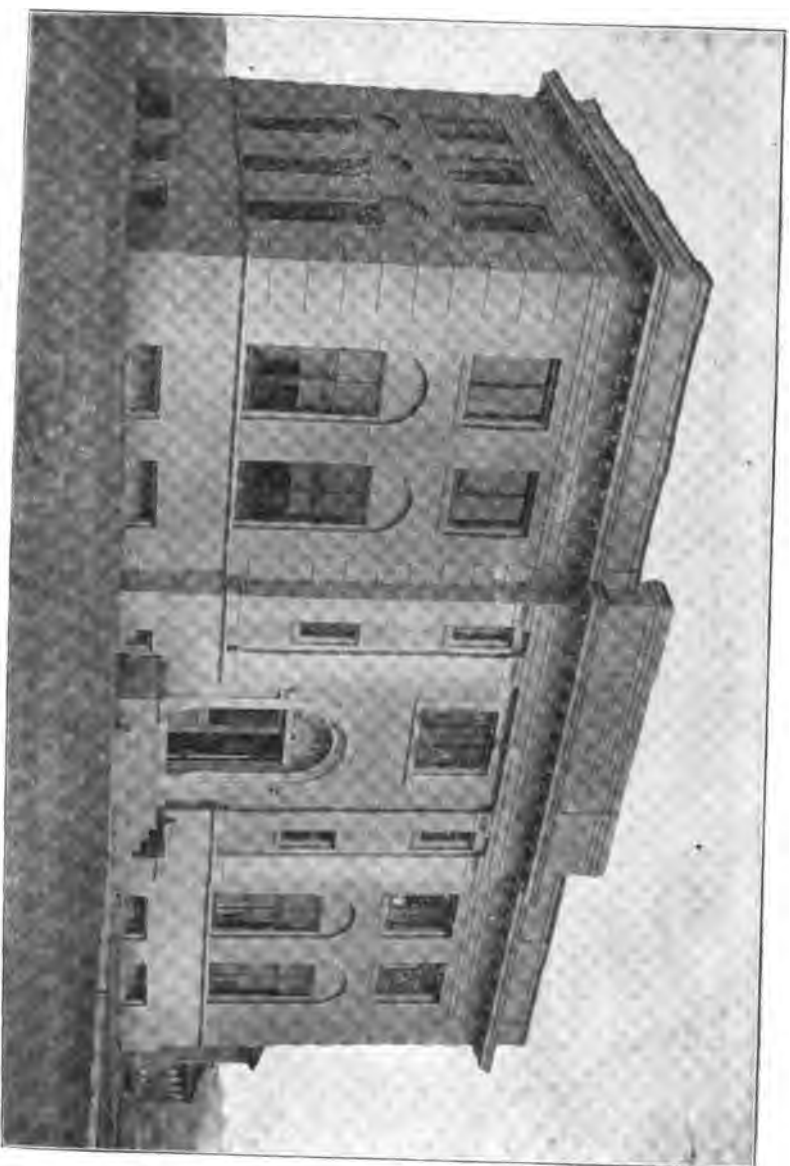
In January, 1902, in response to a request from the trustees, Andrew Carnegie donated \$10,000 for a building under the conditions usually imposed by him. A large and attractive site was purchased and donated by public spirited citizens. December, 1902, saw the library in its own building,—the first time in its existence when it had no rent to pay. The edifice is a two-story brick building, 47 by 65 feet, heated by steam and lighted by electricity. The first floor is taken up by the stack, children's reading, general reading, reference and librarian's room. The second floor is used by the women's clubs, library trustees, school board and other organizations. Hallett & Rawson of Des Moines were the architects.

In March of this year, books were first issued free to all residents of Newton, the card charging system being used. Since that time the circulation of books has continually increased. The average daily circulation for the last four months has been fifty-five. Mr. Samuel Richards and other citizens have given \$1,100 toward a book fund. The library and reading rooms are open eight hours every week day during the school year, and six hours each week day during the summer.

The library board consists of W. O. McElroy, president; Miss Bertha Griebeling, secretary; E. C. Ogg, Mrs. C. W. Campbell, Mrs. O. C. Meredith, E. J. H. Beard, O. N. Wagley, John L. Mathews, A. Lufkin. Miss Belle E. Smith is librarian.

ODEBOLT.

During the year 1896 the Women's Reading Circle of Odebolt began the accumulation of a fund for the purpose of establishing a free public library in Odebolt. They gave entertainments and secured lecturers, turning the surplus receipts into the fund. By September 1, 1897, they had \$148.85 in their treasury. Hon. W. W. Field of Odebolt then subscribed \$500, and other contributions were made by citizens of the town and neighborhood, the total amount contributed being \$1,451.35. A corporation was organized



NEWTON PUBLIC LIBRARY-CAREFREE BUILDING.



ONAWA PUBLIC LIBRARY—GIFT OF JUNIOR ANDERSON OLIVER.

and stock issued to the subscribers. Books were purchased, rooms rented and the library was open to the public July 1, 1898.

In October, 1900, Mr. Field made another contribution of \$500, on condition that the town of Odebolt take the library as a gift from the stockholders and agree to levy a yearly tax of two mills for its support. The town accepted the library on these conditions and has since observed them. At present the library comprises 2,000 volumes of choice literature in good condition. Rented rooms are occupied, but in the near future a building will be erected for its use. The library is open each Sunday afternoon, Wednesday afternoon and evening, and Saturday afternoon and evening.

The members of the present board of trustees are as follows: W. W. Field, president; Joseph Mattes, vice president; F. P. Motie, secretary; Mrs. W. A. Helsell, Mrs. J. Wheaton, Mrs. C. C. Cay, Mrs. H. J. Matthews, W. F. Bay and W. E. Hamilton.

Librarian, Mrs. E. P. Pottieger.

ONAWA.

The Onawa Public Library had its origin in a proposition made by Hon. Addison Oliver, to the town council of Onawa, on the 31st day of December, 1901. This proposition contemplated the donation of the recently vacated Congregational church building, a lot 132 feet square conveniently located for library purposes, and \$4,000 for the purchase of books, furniture and fixtures. This proposition was made on condition of the establishment and maintenance of a free public library under the provisions of the State law.

It was accepted by the council on January 6, 1902, and the question of establishing said library was submitted to vote and carried at an election held on the 31st day of March, 1902. The rooms were fitted up, books and furniture purchased, the books properly classified and cataloged and the library opened to the public on the 24th of March, 1903. The librarian attended the Iowa Summer School for Library Training, under the auspices of the Library Commission, during 1903.

The library at present contains about two thousand five hundred volumes. A considerable amount of the donation is still unexpended and additional books are being purchased as rapidly as is deemed expedient.

By a vote of the library board, the library is made free for the use of all residents of the county, thus making it in effect a free county library. There are now 590 patrons of the library enrolled. The circulation since it was opened exceeds 1,000 volumes a month and is on the increase.

The building is well adapted to library purposes and will meet the needs of the public for years to come.

The members of the present board of trustees are as follows: Addison Oliver, president; F. E. Lark, secretary; Dr. J. F. Battin, P. K. Holbrook, Mitchell Vincent, C. E. Underhill, A. Kindall, C. H. Huntington, Mrs. C. W. Sears.

Librarian, Miss Maude E. Oliver.

OSAGE.

The Sage Public Library had its origin in the gift of some land for library purposes by Orrin Sage of Ware, Mass. Mr. Sage, in conveying 669 acres of land situated in Iowa and Missouri June 10, 1873, expressed the purpose of the gift in the deed, as follows: "For the purpose of founding and perpetuating a public library for the benefit of all the inhabitants of the town, with the hope and expectation that the library may be made useful in promoting the intelligence and the moral and religious welfare of the citizens of said town of Osage, and as some token of the interest felt by him in the place bearing his name."

On the 30th of March, 1874, at a special election, the town voted to form and maintain a free public library under the provisions of the Code of Iowa. A two-story brick building was erected 24 by 60 feet in dimensions. It was completed April 4, 1875, at a cost of \$5,700. Of this amount Mr. Sage contributed \$2,500 in money, and Osage the remainder.

Several hundred volumes were received from the Osage Library Association, an organization which had been in existence for several years, and the library was opened to the public on the second floor of the building, the lower floor being rented for the benefit of the library, and books were added from time to time by the library committee of the council.

February 4, 1895, the library was reorganized under the provisions of the laws of 1894, the mayor and the city council appointing a library board of nine members.

Since the reorganization a tax has been levied for the support of the library. It has been classified by the Decimal system and cataloged.

The library now has 3,150 volumes besides a large number of public documents, and has added two or three hundred volumes annually in recent years. The library and reading rooms are open every secular day except holidays from 2 to 9 P. M.

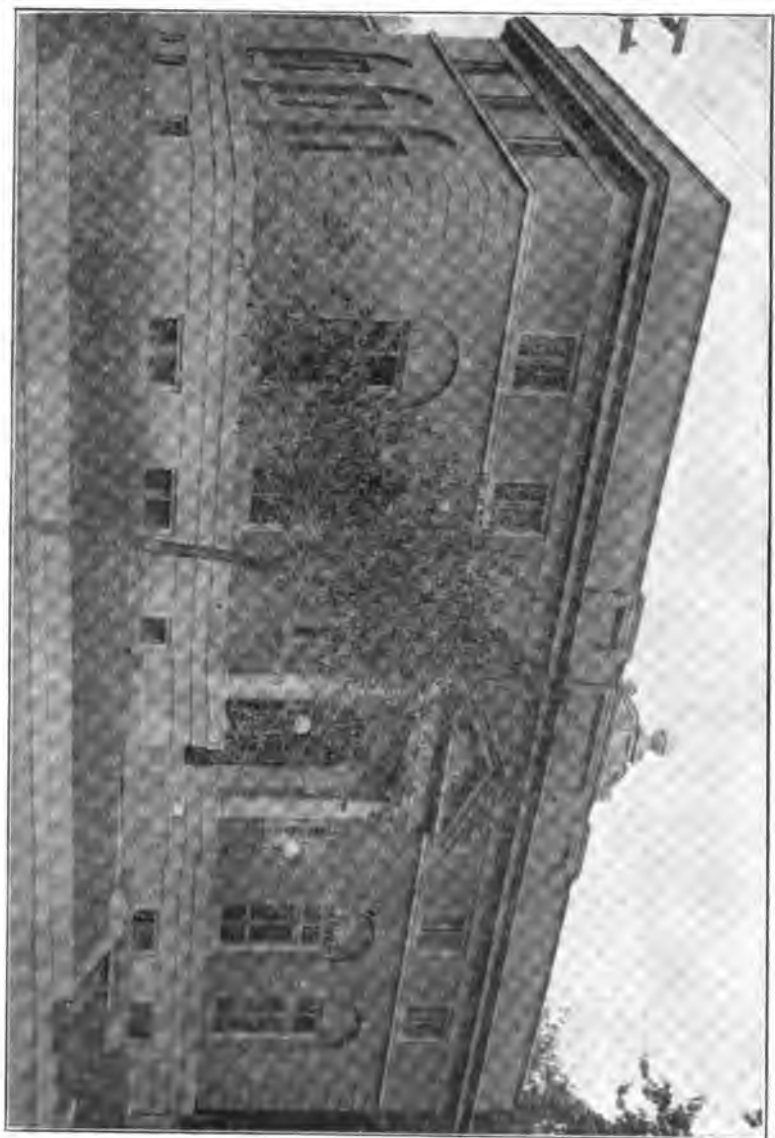
The librarian reports nearly seventeen thousand books loaned the past year; on recent Saturdays as many as two hundred books have been taken out, besides large numbers visiting the reading rooms, where the best recent periodicals are kept on file.

The librarian has also established a children's corner, with low tables and chairs, where juvenile books are kept for the special convenience of the children, and the addition has proved a popular one.

A movement has recently been inaugurated to secure a new library building which shall furnish much larger and better quarters for the library, and our citizens are manifesting great interest in the subject and promising hearty support.

The members of the present board of trustees are as follows: Col. Alonzo Abernethy, Dr. W. H. H. Gable, W. C. Moss, O. L. Cole, Mrs. Clarinda Hitchcock, Mrs. N. C. Deering, Mrs. M. S. Stacy, Mrs. Frank Merrill, Miss Blanche McLaughlin.

Librarian, Mrs. Ella M. Stacy.



OSKALOOSA PUBLIC LIBRARY—CARNEGIE BUILDING.



OTTUMWA PUBLIC LIBRARY—CARNEGIE BUILDING.

OSKALOOSA.

The Oskaloosa Free Public Library is an outgrowth of a public library established in the year 1895, by the Young Men's Christian Association and the Oskaloosa Woman's Club, acting in conjunction. On June 25, 1895, the Y. M. C. A. offered to turn the association library over to the city, and to house and care for the same, provided the Woman's Club should aid the organization with work and money. The Woman's Club accepted the proposition, and under the joint management the institution flourished and grew from 500 books to 2,000, in 1902. Many fraternal orders and private individuals contributed to the library, the Woman's Club alone, giving \$800.

In February, 1899, the trustees petitioned the city council to establish a free public library as provided by the Code of Iowa, and proposed to turn the library over to the town, should such a proposition carry at the election. On March 27, 1899, the qualified electors of the town of Oskaloosa, by a majority of 554 voted to maintain a free public library, and the transfer actually took place February 13, 1900, since which time the library has been in charge of a board of trustees, appointed by the mayor, as provided.

March, 1902, the board asked of Mr. Carnegie the gift of \$20,000 for the erection of a public library building. The request was granted, under the usual conditions regarding site and annual maintenance.

The building will be dedicated and occupied early in the fall. A trained librarian, Miss Priscilla Pickrell, of the Illinois Library School, has been engaged and will assume her duties soon. There are about three thousand volumes in the library including unbound magazines, and official reports, state and national. Large additions will be made, as soon as the new building is completed.

The board of trustees is composed of the following members: J. A. Kalbach, president; Mrs. Richard Burke, secretary; Dr. L. A. Rodgers, J. C. Williams, Prof. A. Hull, A. P. Spencer, Mrs. H. L. Spencer, Miss Mamie Meredith, Miss Mae J. Evans.

OTTUMWA.

The Ottumwa Public Library had its origin in the Ottumwa Library Association, incorporated in 1872, to exist for twenty years, and was subsequently renewed for twenty years more. Its capital stock was fixed at \$10,000, divided into shares of \$10 each. It had a board of nine directors, one third of whom were selected by the stockholders each year, the term of office being three years. The executive officers were a president, vice president, secretary and treasurer, to be elected by the board each year and to hold office for one year. The objects of the association were "forming and perpetuating a public library, with a reading room, cabinet antiquities, curiosities and works of art, and promoting the diffusion of useful knowledge by means of lectures and otherwise." The librarian's salary varied from \$100 a year down to nothing. Shareholders paid an annual fee of \$3, others \$4. Life membership was obtained by the payment of \$50; at one time an honorary life membership conferred for valuable services or donations amounted in value to \$100 or more. Dues were later reduced to \$2, and when the Tourist Club took charge of the library in 1897 it became free.

This club of fifteen noble women fostered the library for the next five years until its 3,000 volumes formed the nucleus for the public library. The work of the Tourist Club was entirely a labor of love and devotion.

Since 1891 the library has received \$200 a year under the will of Hon. Peter Ballingall, who has also provided for the ultimate accumulation of \$6,000 to accrue to the library, and also an annual income from one fourth the remainder of his estate. The Ottumwa Library Association has done faithful work, and still has charge of the expenditure of the Ballingall funds.

January 16, 1900, Andrew Carnegie offered \$50,000 for a library building on condition that a suitable site and maintenance fund of not less than \$5,000 a year be provided by the city. At an election September 24, 1900, the tax was voted and the offer gladly accepted.

The library ordinance was passed by the city council October 1, 1900, and Mayor T. J. Phillips named the following trustees who were confirmed by the council: J. T. Hackworth, S. P. Hartman, C. M. Myers, F. W. Simmons, J. J. Smith, W. A. McIntyre, D. E. Chisman, George Withall, and C. P. Brown. October 3, 1900, the library trustees organized with J. T. Hackworth president and S. P. Hartman secretary of the board.

October 26, 1900, the site was purchased for \$7,500, \$500 of which was raised by subscriptions from the people.

March 15, 1901, the plans for a building offered by Smith & Gutterson of Des Moines were accepted by the board and also by the council March 28th.

The contract for the building was awarded to Bartlett & Kling of Galesburg, Ill., May 15, 1901.

September 21, 1901, the corner stone was laid and September 24, 1902, the building was dedicated with proper ceremonies.

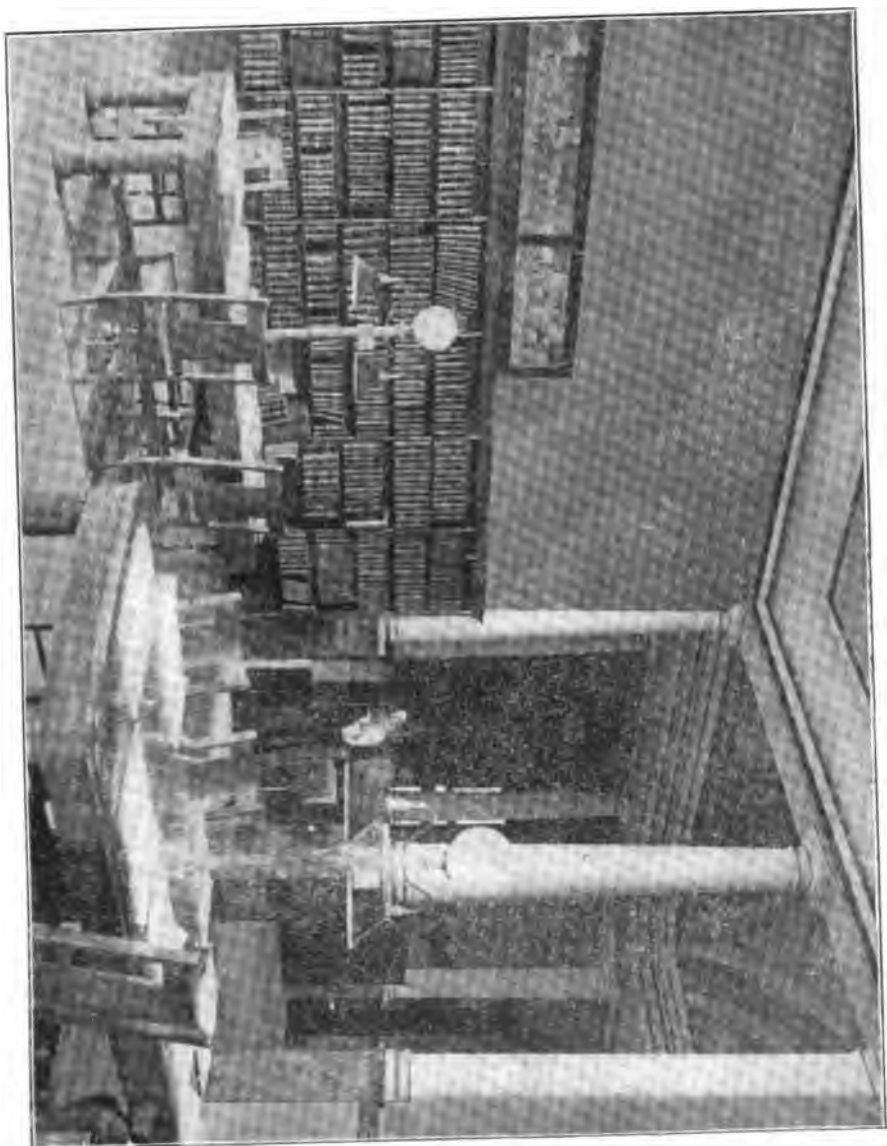
The cost of the building was \$50,200. There is invested in the library about seventy thousand dollars. Besides the annual maintenance fund of \$5,000 and the Ballingall fund the library has its light, heat, water and telephone service free of charge. The city makes this provision in giving its franchises, which saves for the maintenance fund of the library at least \$1,500 a year.

Mary E. Downey of the Field Columbian Museum Library, Chicago, was appointed librarian January 28, 1902, and began her duties the following May.

In its first year as a public library marvellous progress has been made. To the 3,000 volumes turned over by the Ottumwa Library Association volumes have been added by gift, purchase and binding until the library now contains 9,451 volumes. The registration book shows 3,602 people using the library. The reference department is especially good for the time the library has been organized and the work with children is very successful. The books are all classified and the catalogs will soon be complete to date.

PERRY.

Early in 1902, Perry voted to establish a library, and in July of that year, the mayor appointed as trustees: L. V. Harpel, P. H. O'Connor, D. D. McColl, Allen Harvey, S. E. Carrell, Mrs. A. W. McPherson, Mrs. A. J. Ross, Mrs. W. H. McCammon and Mrs. P. C. Rude. Mr. Harpel



OTUMWA PUBLIC LIBRARY—INTERIOR.



PERRY PUBLIC LIBRARY-CARNEGIE BUILDING.

has since removed to Boone, and his place on the board filled by Miss Kate Dana. The officers now are: Mrs. A. W. McPherson, president; Allen Harvey, secretary, and Mrs. P. C. Rude, vice president. The first move of the newly appointed board was to appoint a committee to obtain a gift from Mr. Carnegie, and the efforts of this committee were successful. A donation of \$10,000 was secured from Mr. Carnegie, on the usual conditions, which were promptly met. Liebbe, Nourse & Rasmussen of Des Moines, were selected as architects. The plans were approved and the contract let in July of this year. The building is now in the course of construction and will be completed early in 1904. The first tax money will not be available until April, 1904. A very small collection of books now in the hands of a defunct library association will be turned over to the new library.

The building is of gray pressed brick, with an auditorium in the basement, and will be triangular in form. It will be heated with hot water and lighted by electricity.

ROCK RAPIDS.

In March, 1894, the Ladies Reading Circle of Rock Rapids gave a banquet to the citizens of the town, the admission being a book or a subscription to a periodical, the object being to build up a public library; about two hundred books were found to be the result of this entertainment. The circle selected a board of trustees to control the library, adopted rules, and appointed a committee to visit the city council and tender to the city, this nucleus for a public library, provided they would furnish a room; thus the library was started, but without money to carry it on, the city furnishing the room, fuel, etc. Mrs. Whitney was elected as librarian without pay, the other members of the Reading Circle agreeing to help in the work. The next year a tax was levied for the library and a board of nine members appointed.

The library was afterwards moved to a vacant room in the high school building, remaining there two or three years, until the room was needed for school purposes. The board bought a lot with two small buildings on it, and about \$200 was solicited from the citizens for fitting up one of the buildings for a library. The books were moved and Mrs. Whitney was again called to fill the position of librarian. Of the annual two-mill levy, one half was used to pay for the property and the other for running expenses. The property is now paid for and about 3,000 volumes are on the shelves.

The members of the present board of trustees are as follows: H. B. Pierce, president, Mrs. M. C. Bradley, secretary; W. S. Wilson, Mrs. Clara Kech, Mrs. Kate Cox, Mrs. C. Puskett, Mrs. Mary Chapman, Mrs. L. L. Whitney, Prof. Wilson, E. Y. Greenleaf.

Librarian, Mrs. L. L. Whitney.

SANBORN.

The Sanborn Public Library owes its origin and its existence today to the Twentieth Century Club of Sanborn, which consists of twenty members who in March, 1901, decided to establish a library. Their object being, not alone to stimulate interest in self development, but to be the means by which others might have these opportunities.

During the two years it was under their care and management, they purchased 190 standard books, and late fiction, placing in the hands of the public, the best reading matter to be obtained, the result being highly satisfactory to them in the number of children and adult readers, both in the town and the surrounding country.

Three days in the week, for two hours, the library was open for the issue of books, each club member acting as librarian on her appointed day. Credit is due the club members, for their careful management, the time, energy and devotion given to the library.

This library was turned over to the town of Sanborn, and became a Free Public Library, supported by a tax, and under the control of the following members of the library board: Mrs. M. M. Burns, president; Hon. E. M. Brady, vice president; Mrs. J. A. Johnson, secretary; Dr. C. B. Rentz, treasurer; Mrs. A. Lucas, Mrs. C. Wilson, Mrs. J. A. Daly, Mrs. R. D. McMillen, and Miss Mamie Johnson, with Mrs. R. D. McMillen as chief librarian.

Under the careful management of the board, the library is in a thriving and prosperous condition; at the present time there are upon the shelves, about three hundred books, and more will be added very soon. The Traveling Library of the Iowa Library Commission is also used, which provides fifty volumes at a time for a period of three months.

Owing to the generosity of the Twentieth Century Club ladies, who have willingly offered to continue acting librarians for one year, nearly the entire amount of the tax will be used for the purchase of books.

SHELDON.

The plan of starting a public library originated in the Ladies' Chautauqua Literary and Scientific Circle, through the untiring efforts of Mrs. W. H. Sleeper and the ten other members associated with her.

Two rooms were opened March 15, 1894, located over Smith Bros.' hardware store, which was destroyed by fire on the morning of March 17, 1894.

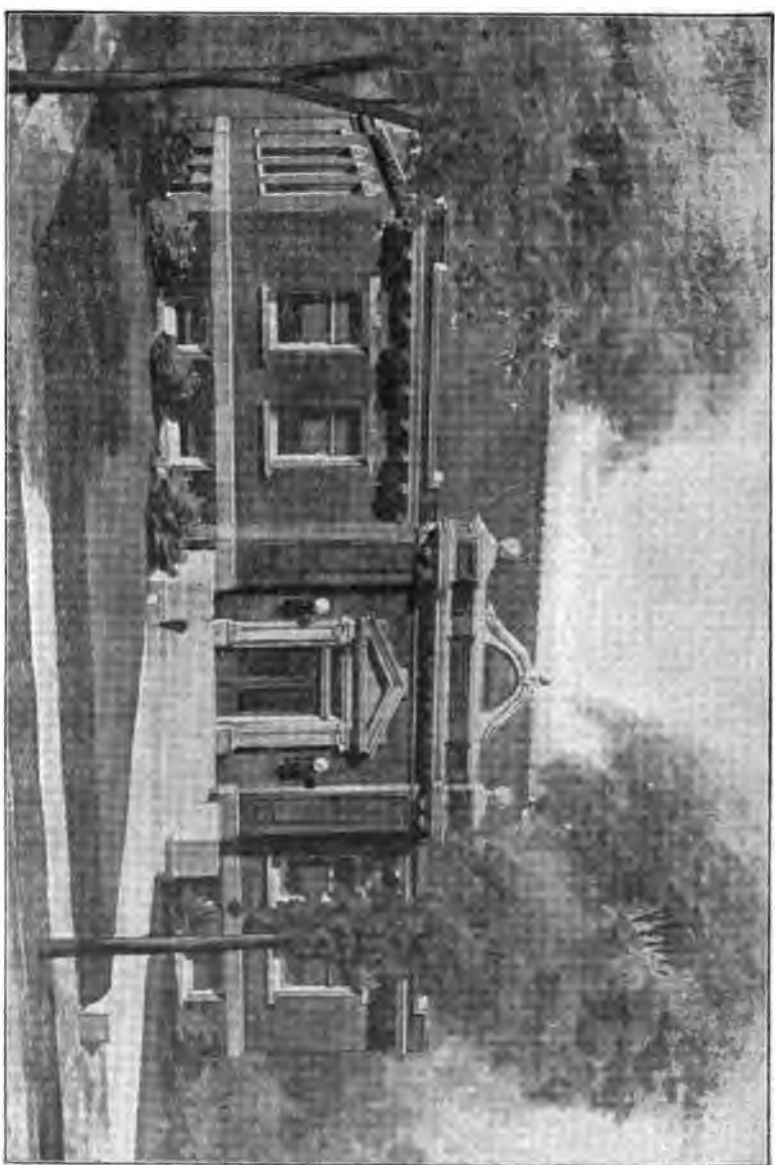
The money used in this enterprise was furnished by the C. L. S. C. ladies, and was obtained from entertainments, the total amount being \$56.20. The loss was reimbursed to the ladies by a number of public-spirited citizens.

On account of the hearty support and encouragement tendered the Circle a Public Library Association was formed. The articles of incorporation were effective from April 20, 1894.

The city council appointed an advisory board, consisting of E. Y. Royce, mayor; P. W. Hall, city clerk; and William H. Sleeper, a life member of the library association.

In the fall of 1894, the library was placed in Shipley & Co.'s drug store, with 200 volumes for loaning, and the sum of 50 cents per year charged for the use of books.

Messrs. Shipley were voted life members, in consideration for their generosity in keeping the library, free of charge. The library was given to the city in November, 1895, and the following trustees appointed: Messrs. Lane, Henry Shipley, Simpson, O. C. Starrett, and Mesdames Henry Hollenbeck, McCandless, Roth, Sleeper and Wyman.



SHENANDOAH PUBLIC LIBRARY-CARNEGIE BUILDING.



NASHUA PUBLIC LIBRARY—INTERIOR.

It was decided to ask that a tax be voted by the city at the spring election, for public library expenses, as provided by the State law, and at the spring election, in 1897, such a tax was voted.

The library was moved from Shipley & Co.'s store to the Mack Harris Music Rooms, and Mrs. Mack Harris appointed librarian in October, 1897. It was again moved in January, 1902, to its present quarters, in the rear of the McColm shoe store. There are now 1,950 volumes in the library.

During the past winter the books have been classified and cataloged by Miss Maude A. Davis, of Des Moines, who received her training at the Illinois State Library School.

The members of the present board of trustees are as follows: Dr. Henry Shipley, president; Mrs. William Sleeper, vice president; Benj. Hollenbeck, secretary and treasurer; C. S. McLaury, Mrs. John McCandless, Mrs. G. W. Roth, Mrs. Milton Dailey, Mrs. H. M. Crocker and Mrs. Brock.

The librarian is Mrs. Lizzie C. McColm.

SHENANDOAH.

Through the efforts of Mr. Thomas H. Read, and his alone, in January, 1903, an offer of ten thousand dollars for a library building for Shenandoah was received from Mr. Andrew Carnegie, upon the usual conditions of a site provided and a yearly tax of not less than one thousand dollars. The offer was promptly accepted by the city council after an informal ballot by the men and women citizens; and at the March election the qualified electors voted by a large majority in favor of imposing the required tax for the establishment and maintenance of a library.

The following board of trustees was appointed, their term of office being decided by lot: Mr. Thomas H. Read, president; Rev. J. W. Bulger, Miss Alice Priest, two years; Mrs. A. J. Crose, Mr. A. W. Murphy, Mr. C. W. Fishbaugh, four years; Mrs. Sarah B. Anshutz, Mr. C. N. Marvin, Mr. E. S. Welsh, six years.

Over four thousand dollars have been raised by subscription for the purchase of a site and for books. A lot 75 feet by 129 feet, on the corner of Thomas avenue and Elm street, one block from the business center of the city, has been secured. The place cost \$3,700, and includes a house that is hoped can be sold for \$1,000.

Every effort will be made to get the very best building possible for the money. The city is interested in the library, as it usually is in every good thing, and is desirous that the library may be an unqualified success. Patton & Miller, of Chicago, have been employed as architects, and it is hoped the new building will be completed in about a year.

The board of trustees is glad to acknowledge the help that has been given by the secretary of the Iowa Library Commission and by the boards of trustees of various Iowa libraries.

SIOUX CITY.

The Sioux City Public Library originated in the Young Men's Literary Association. Its title was significant of its general purpose. The records of the association and reminiscences of its surviving original members are an interesting story of early literary and social life in Sioux City. On October 26, 1869, a meeting was held at the office of Captain Gilliss "to initiate a movement for the formation of a Young Men's Association." Three committees were appointed at this meeting, one to prepare a constitution; another to secure rooms for the association; and a third to report on the feasibility of a course of lectures. The second meeting was held November 2d; a constitution and by-laws were adopted, and the records state that "its object is to establish and maintain a library and reading room, to secure literary and scientific lectures, and in other ways to improve the literary tastes of its members."

Officers and directors were elected and the work of collecting a library was at once begun, and as a means of obtaining it lecture courses were prepared. The proceeds from the lectures, together with the membership fees and annual dues, and whatever donations were made, constituted the resources for the establishment of the library.

The library was opened March 19, 1870, with about three hundred and twenty-five books in the county auditor's office in the Hubbard Block, where it remained until 1873, when it was removed to the Davis Block. Robert Buchanan was the first librarian, and with others who acted as volunteers, kept the library open until it passed into the possession of the city.

At the election held March 1, 1875, the question, "Shall the city accept the benefit of the statute for the creation and maintenance of a free public library?" was carried in the affirmative. The city council, May 21, 1877, passed an ordinance to establish and maintain a library.

Negotiations were commenced with the Young Men's Literary Association which resulted in the transfer of about six hundred books to the city, and the library was located in the Davis Block from 1877 to 1881, then after moving three times, it was installed in a library building built by the city. The city commenced the erection of the building in 1891, and it was finished and ready for occupancy in August, 1892. It is a massive five-story building of sandstone, quarried at Hot Springs, S. D., the library occupying the entire ground floor, the city offices also being in the building on upper floors. The finish of the rooms is of solid oak and so devised as to carry out the general impression of massiveness and durability that is characteristic of the whole structure. As it is located very near the center of business, the reading privileges have been easy of access to a large number of people, whose appreciation is evinced by the extensive use of the reading rooms.

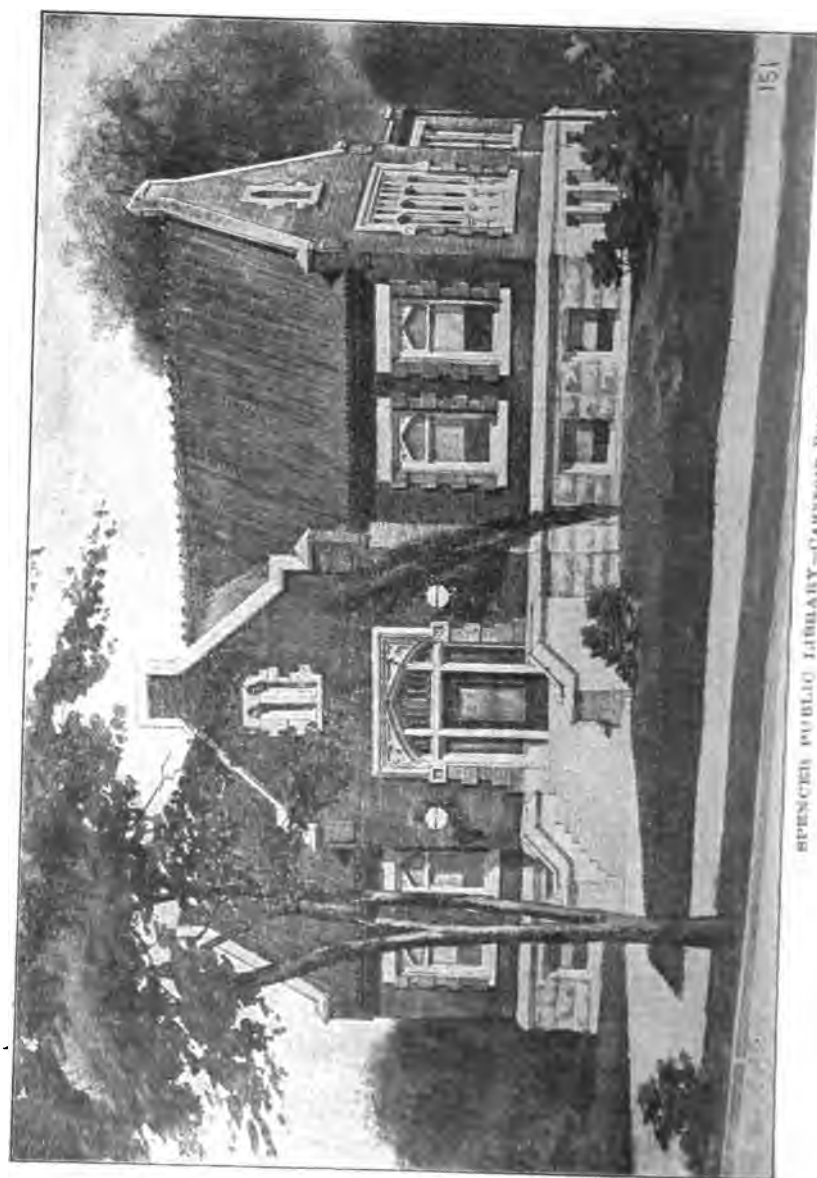
Miss Esther Crawford classified and catalogued the library and later served as librarian, being succeeded by the present librarian.

The members of the present board of trustees are as follows: Hon. Geo. W. Wakefield, president; Mrs. Melida Pappe, secretary; Dr. Robt. H. Brown, John H. Charles, Dr. J. C. Krejci, Henry C. Powers, Mrs. Walter Strange, Miss Susanna H. Weare, Chas. K. Williams.

Mrs. Rose Oberholtzer, librarian.



SIoux CITY PUBLIC LIBRARY.



SPENCER PUBLIC LIBRARY—CHENKOTE, MASSACHUSETTS.

SPENCER.

The Spencer Library Association was organized in 1883 by a few ladies who were willing to give of their time and means that Spencer might have the best advantages possible at that time in the way of books, which meant hard work, much time and sacrifice on their part.

Officers were selected, Mrs. Ackley Hubbard being chosen as the first presiding officer.

The beginning was made with a few new books, and a few from the W. C. T. U., of which they wished to dispose. Mrs. Cray gave the use of her parlor as a library room, acting as librarian for a time, the ladies taking turns in looking after the library. A plan was made for raising money to carry on the work and buy books, also for regular subscribers, who by paying the sum of \$1, were entitled to the use of the library books for one year, non-subscribers paying at the rate of five cents a week. Fairs were held, suppers given, and money raised by many legitimate ways.

After seven years of untiring effort the ladies were able to purchase a small frame building for library purposes, paying \$500 for it, which they still occupy. To keep this in repair, pay insurance and other incidentals necessary, added so much to the expense that the ladies found it too great a burden, so offered the town council the property, on condition that they levy a tax for the maintenance of the library, which proposition was accepted, and a tax voted by the people, as provided by the State law.

The property, now valued at \$1,000, was turned over to the city, the ladies still having charge of it and taking all responsibility, which did not materially lessen their work. The name was changed to Spencer Public Library and a librarian employed at a small salary. For three years a tax of one mill was received, then one and one half for a time. The last two years they received the full two mills as provided by statute.

There are about 3,500 books on hand. With the help of the mayor and city council there is in view the speedy erection of a new \$10,000 library building, the funds being donated by Andrew Carnegie on the usual conditions. The present location on South Main street has been exchanged for a delightful corner on Third street, and the new building will be completed in 1904. Patton & Miller of Chicago were chosen as the architects for the new building.

The members of the present board of trustees are as follows: Mrs. Emma A. Ingalls, president; Mrs. Ackley Hubbard, vice president; Mrs. Sarah A. Buck, secretary; Mrs. L. M. Dye, Mrs. M. J. Steele, Miss Myra Wood, Miss Anna Tuttle, Dr. W. J. Vaupel.

Mrs. H. J. Brown, librarian.

STUART.

The Stuart Free Public Library was established in 1902, under the provisions of the State law, the people voting on the proposition which was carried. In order to provide funds for beginning the library, \$300 was subscribed by the citizens to buy books. A house to house canvas resulted also in a number of books being donated. Gifts from the city clubs, organizations and Y. M. C. A., were also received. From time to time there have been added small purchases of new books, until at the present date there are

1,086 volumes. The number of borrowers' cards issued up to date are 724. Average circulation from July, 1902, to July, 1903, is 811 monthly. Rented rooms, consisting of reading room, library and reference room, are occupied.

The reading room is well patronized by the young people, who find here the best current literature of the day. During the fall and winter the library is open three afternoons and three evenings each week. In summer it is open three evenings only, each week.

The secretary of the Library Commission by personal visits assisted the first librarian, Mrs. C. H. Leighton, in her able efforts to properly organize the library.

The members of the present board of trustees are as follows: J. R. Small, Jr., president; F. M. Chaffee, vice president; R. H. Dosh, secretary and treasurer; S. Monahan, Chas. Ostrander, Mrs. G. W. Boatright, Mrs. M. McCrea, Mrs. C. Holmes and Dr. J. A. Ball.

Mrs. Josie R. McMullin, librarian.

TIPTON.

In October, 1896, a federation of Women's Clubs of Tipton was formed for the purpose of working for the establishment of a free library and for village improvement.

A good deal of interest was shown by the club women but few material results were accomplished until the following year, when the organization was merged into a Woman's Club, in which every woman in the city, willing to give something of her time and strength for the cause, was eligible for membership.

The village improvement committee was dropped and the library question alone occupied the attention of the club.

The accumulation of funds grew slowly and it was not until January, 1900, that the women felt warranted in making the usual request of the city council that the people be asked to vote at the spring election on the question: "Shall a free public library be established?"

The vote was carried by a fair majority and the following board of trustees appointed by the mayor:

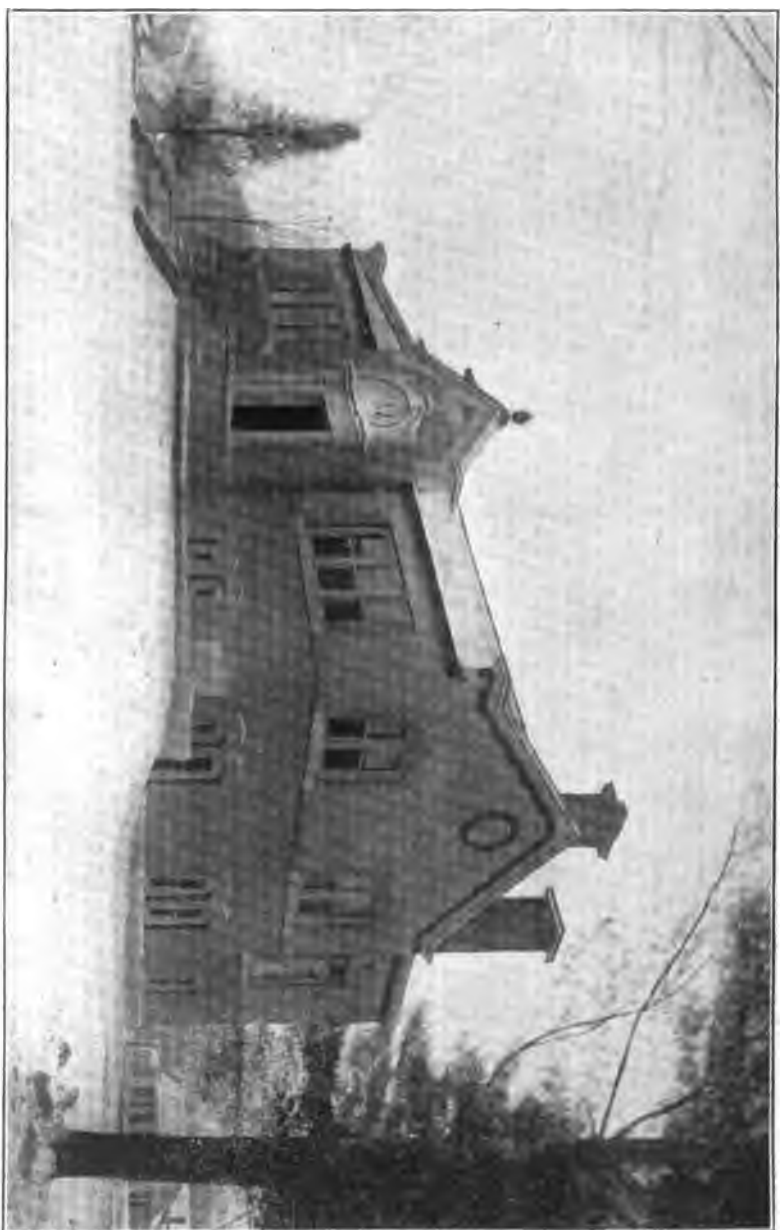
W. N. Treichler, L. J. Rowell, H. L. Huber, E. J. Van Metre, R. S. Bandy, Mrs. S. S. Wright, Mrs. A. N. Filson, Mrs. F. W. Adams, Miss A. M. Dean.

The board organized with W. N. Treichler, president; Miss Dean, secretary. Mrs. A. S. Yates, an active member of the Woman's Club, was selected as librarian.

Six hundred and fifty dollars was turned over to the town by the club and the board proceeded to select suitable rooms, purchase books and make all necessary arrangements for the opening of the library. Two new connecting office rooms were secured near the business center of the town, one room to be used for a reading room.

The city council, anticipating the tax, purchased the necessary furniture, also paid rent of rooms and expense of heating for the year.

These two latter items were again paid, for 1902, and made a donation leaving the tax to be used for supplies and maintenance of library.



TIPTON PUBLIC LIBRARY-CARNEGIE BUILDING.



STUART PUBLIC LIBRARY - INTERIOR.

Six hundred books were purchased and with gifts, made a total of 867 volumes. Twenty-five current periodicals were placed in the reading room, which was fitted up with tables, chairs, magazine and newspaper racks. With the counsel and aid of Miss Tyler, Secretary of the Iowa Library Commission, the library was opened, with modern methods, for the use of the public March 4, 1903.

The beginning of the second year found 1,332 books on the shelves, 356 donated. The circulation for the year was 10,888. Seven hundred borrowers' cards were issued, 30 of that number being non-resident borrowers, of whom a fee of 50 cents per year was collected. The report of the library at the end of the second year showed a total of 1,617 volumes, 107 gifts, circulation for the year 11,259 volumes, total number of borrowers' cards issued 927. The attendance in the reading room for 1902 was 6,549.

Since September 1, 1901, six traveling libraries have been borrowed from the Library Commission for the use of the public schools and study clubs and have been exceedingly useful. No systematic work has yet been done for the schools or clubs, but teachers, pupils and club women have been given a cordial welcome and all assistance possible and are finding the library constantly more helpful to them. Almost a complete set of Harper's, Century and Scribner's monthly bound magazines have been added to the library during the past year. The majority of these were donated unbound, quite a number were sent in exchange from the clearing house of the Library Commission at Des Moines and a few purchased, bound, from second-hand book dealers.

The condition of the library at the end of the first year was gratifying to the friends of the movement, but the rapid growth warned them that the question of more room would soon have to be considered.

About this time Judge Treichler received a favorable reply to a letter addressed to Mr. Carnegie, some time before, regarding a gift of \$10,000 for a library building. The usual conditions were easily complied with. A tax of two mills gave the required income and the town donated an entire block for a site. A levy of one mill for building purposes was made, bringing \$500. An additional \$1,500 was given by citizens and the total amount, \$12,000, put into a building, which is being erected and will be ready for occupancy early this fall.

The building, one story, with finished basement, is an attractive modified colonial style of architecture, built of red brick with stone and terra cotta trimmings, designed by Muaran, Russell & Garden, architects of St. Louis; M. M. Hall of Cedar Rapids, is the contractor. The interior is commodious and pleasing, arranged with a view to general supervision of the entire floor by the librarian.

VINTON.

In June, 1901, through the united efforts of the Women's Clubs of Vinton, a library association was formed for the purpose of starting and maintaining a free public library, until such a time as the city should establish a public library under the Code of Iowa, supported by a tax.

In aid of this purpose Miss Tyler, Secretary of the State Library Commission was called upon for advise and suggestions, and she promptly responded by coming to Vinton and addressing the ladies upon the subject.

As a result of her suggestions the women's clubs formed a city federation and each of the seven clubs so federated chose representatives who organized a library association; adopted a constitution which fully set forth the objects and purposes of the association; and provided a governing body to consist of as many members as there were, or should be in the future, federated clubs; such members to be elected respectively by each club in the federation and this body to choose all necessary officers and committees.

The organization completed, then came the real, arduous work of the enterprise and in this the association was remarkably fortunate in having enlisted the services of Miss Martha Chadbourne, who had been in a position to learn the practical needs, and steps necessary to lead to success in this work and this experience added to her splendid abilities, unabating zeal and enthusiasm, inspired the whole movement to which the president of the association, Mrs. G. M. Gilchrist, also gave her time and energies and their united efforts were enthusiastically supported by all the officers and members of the federated clubs of the city. As a result of these efforts about one thousand dollars in cash subscriptions was raised, a large number of magazines and periodicals and some books were donated. Meanwhile the running expenses of the library were met with money contributed at weekly receptions held in turn at the homes of the club ladies.

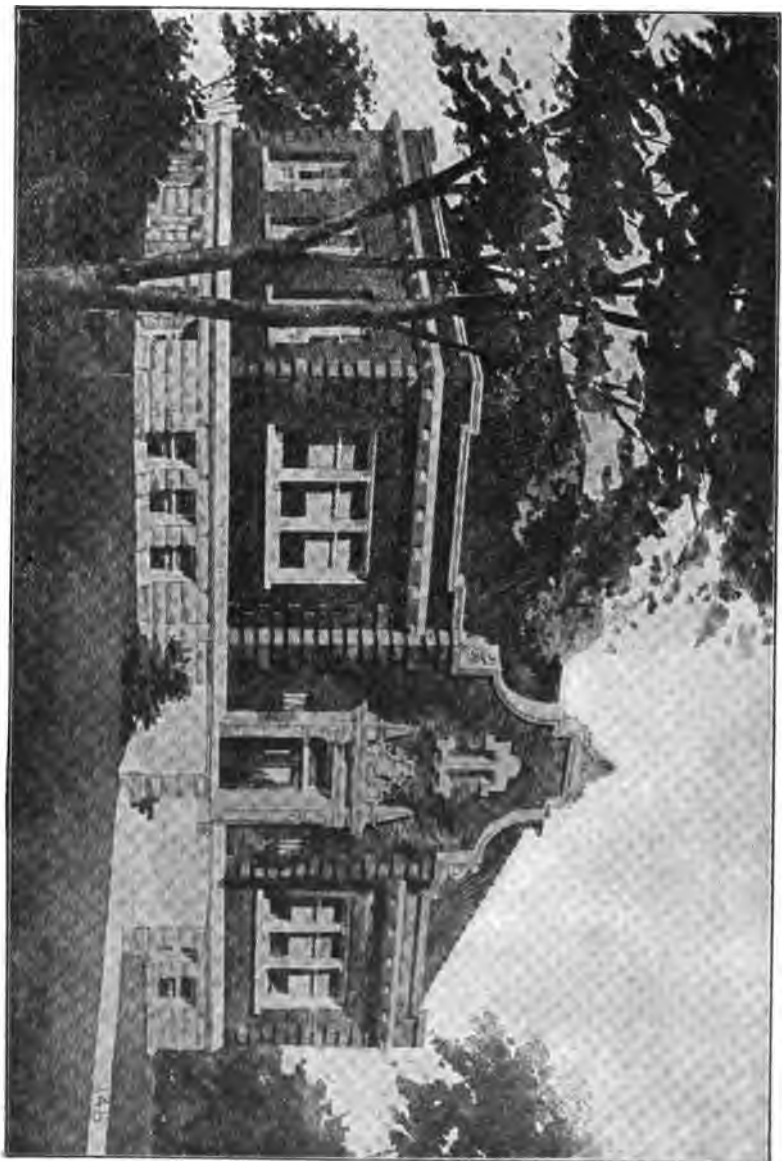
These receptions characterized by informality and simplicity, served a threefold purpose. They not only provided funds for running expenses and afforded a pleasant social occasion but they gave opportunity for discussing library matters, thus keeping up and augmenting interest in the movement, in this way the \$1,000 was left intact for the purchase of books and on the first day of January, a public reading room was opened with excellent equipment for a new library.

Under the supervision of Miss Chadbourne and the new librarian, Mrs. J. R. Adams, the books were classified and additions made so that by the first of March books were issued to the public in the regular way common to a free public library. The librarian attended the Iowa summer school for library training, conducted by the Library Commission.

At the annual city election in March, 1902, with the help of the women's votes and efforts, a proposition to levy a two mill tax for the support of the library was carried. This tax raises about \$1,400 annually.

The mayor and city council appointed library trustees, as follows: G. M. Gilchrist, A. B. Forrester, Mrs. Frances N. Luckey, Mrs. Lola M. Sells, W. C. Ellis, Miss Teresa M. Donelan, Mrs. Emma M. McLane, A. W. White and Alex Runyon, Jr.

Correspondence was had with Mr. Carnegie and he promptly donated \$10,000 for a library building upon the usual conditions. Plans for a building were submitted by several architects and after thoroughly considering them the trustees decided upon Patton & Miller of Chicago as the architects. A building committee of three was appointed and bids were solicited by advertisement and correspondence. Upon opening the bids it was found that the lowest bid was about one thousand dollars in excess of the donation. This coming to the knowledge of a very good friend of the library the committee was told to let the contract and the extra \$1,000 needed would be forthcoming. Accordingly the contract was let to the lowest bidder and work will be commenced at once and carried forward as rapidly as possible.



VINTON PUBLIC LIBRARY—CARNEGIE BUILDING.



WASHINGTON PUBLIC LIBRARY—GIFT OF JANE A. CHILCOTE.

The number of volumes now in the library is 1,370; the total circulation during the past year, 8,604; the number of borrowers' cards in force 1,100. Material for the museum is being contributed daily.

The regular fifty-volume libraries and general loan books on subjects of club study from the Traveling Library of the Iowa Library Commission have been used.

WASHINGTON.

The public library of Washington was organized in August, 1877, largely by the energy of the late Doctor Scofield.

At first it had free occupation of an upstairs room in Burrell's Press building; a few persons donated either books or cash or both, and the officers served gratis. The methods of conducting the library were primitive until 1883, when the use of half of the upper floor in the city hall was given for library use, and a small tax was provided.

There are now over 6,000 volumes, exclusive of a large number of government publications, which were given the library by Senator James F. Wilson; these are accessible to the public on the second floor of the present library building.

The library now occupies its own building, which was formerly the home of Mrs. Jane A. Chilcote, and was bequeathed by her to the library; it is valued at about \$12,000 and is well adapted to the needs of the library. It has been occupied since November 11, 1901.

The members of the present board of trustees are as follows: H. A. Burrell, president, A. H. Wallace, Col. H. Scofield, Mrs. M. J. Roberts, Mrs. William Scofield, Rev. W. C. Allen, Prof. R. B. Crone, Miss C. A. Roas, C. C. Patterson.

Librarian, Miss N. J. Springer.

WATERLOO.

In the spring of 1897 the people of Waterloo voted to establish a free public library. The books were purchased and cataloged, using the Dewey system, in the summer of 1898, and the library was opened to the public for inspection and the issuing of cards September 22, 1898, but no books were issued for home use until September 27th. There were 3,555 books in the library when opened, and July 1, 1903, there were 7,079. When opened the hours were from 3 to 6 P.M. and 7 to 9 P.M., but in January, 1903, this time was changed to 3 to 9 P.M. The April 1903 report shows 2,416 borrowers' cards and many of the readers use the extra non-fiction cards. Two library and reading rooms are maintained. Mrs. N. A. Wilson is librarian and is in charge of the East Waterloo rooms, and Mrs. J. M. Brainard is assistant librarian and is in charge of the West Waterloo room.

The board of trustees is composed of the following: Mr. H. M. Reed, president, Mrs. D. W. Crouse, vice president, Miss J. V. Dunsmore, secretary, Miss G. Etta Bankson, Mr. A. B. Hallowell, Mr. E. T. Cowin, Mr. D. P. Sias, Mr. C. W. Mullan, Mr. J. W. Arbuckle.

WAVERLY.

The public library at Waverly dates its beginning from June 20, 1868, at which time the Waverly Library association was incorporated. In 1893 it became a free public library and since that time a collection of over twenty-three hundred volumes has been built up. A reading room has been maintained which is open every evening except Sunday.

In January, 1903, Mr. Carnegie made a proposition to the city to erect a library building to cost \$10,000, on the usual conditions regarding annual support and the furnishing of a suitable site. The acceptance of the gift has been delayed for several reasons, but has now been accepted and lots for the building purchased by the city. The building will be erected as promptly as possible.

The members of the present board of trustees are as follows: F. P. Hageman, president; E. J. Kaufman, vice president; Dr. Vera Norton, secretary; Mrs. Burton E. Sweet, Mrs. Louis Case, F. A. Lee, O. A. Hardwig, P. Monroe Smock, Mrs. Leopold Levy.

Librarian, Mrs. Mary B. Whitmire.

WEST LIBERTY.

During the eighties, West Liberty supported a flourishing branch of the Y. W. C. T. U. whose primary object was to abolish the evils of intemperance. Finding but little to do in this direction in West Liberty, they wisely decided, while suppressing the craving for liquor, to create a craving for literature. They began to purchase books and to circulate them. They asked for donations of money or books or both. The Good Templars had a small library which they generously contributed. A catalog was published and the "Y" Library was launched. In 1890 the Y. W. C. T. U., or the "Y's" as they called themselves, disbanded; but seven of its members voluntarily agreed to assume charge of the books and to keep them circulating. They formed an organization, adopted a constitution and continued under the same name—The "Y" Library. Miss Edith Miller was the first president and Miss Lizzie Shipman the first librarian. One section of their by-laws contained an "oath" binding each one of the seven never to accept any of the books nor any money arising from the sale thereof.

For five years these seven young ladies worked zealously and heroically. By constant fanning they kept alive the flame which illuminated the pathway of literature. Their labor of love and self-sacrifice can never be overestimated; but the time for larger things was at hand.

In 1895 these young ladies turned over the "Y" Library to the "People's Library Association," membership in which was obtained by paying a fee of \$2. The books were moved from the city hall to the room they now occupy, a reading room was opened, and a salaried librarian employed. This was the first time in the history of the library that any one but ladies had been allowed a voice in its management. A majority of the next board of directors were gentlemen and it is a sad commentary on their business foresight that in less than two years the membership fees were spent, the treasury empty, and the outlook gloomy. At this critical stage the ladies of the Floriculture Society came to the rescue with a chicken-pie dinner which

netted \$85, and the sinking infant became convalescent. The library association was reorganized, a new board of directors chosen (a majority of whom were ladies) and the library and reading room remained open.

During the next three years, this struggling infant devoured dozens of fowls, gallons of bivalves and mountains of ice cream. Not satisfied with appeasing its appetite, it craved amusement and instruction. A baseball game was arranged for its benefit which brought in \$125. Grandfathers and grandmothers, clad in the garments of their youth, strutted and gamboled on the stage in "The Deestrick Skule", to the amusement of a large audience and the enrichment of the library treasury by over \$200. Histrionic entertainments of varying grades of excellence were inflicted on a long suffering public with cheerful impunity. All were liberally patronized because the proceeds were expended for new books, while a small rental for their use met current expenses. Fed on such viands and cared for with such solicitude, this lusty young infant thrived and waxed strong. It passed this trying age, felt ready to stand alone and demanded a regular income.

In the spring of 1900, this proposition was submitted to the voters: "Shall a Free Public Library be established in West Liberty and supported by a municipal tax?" It carried, the library became free, and its usefulness doubled. The friends of the library have always been glad that, while the votes of the women largely increased the majority, yet they were not needed to carry the proposition. During these later years, the library has been its own missionary and the exponent of its own usefulness. It has become firmly established in popular favor and has emphatically demonstrated the necessity for its existence.

To be candid, the directors have for some time been straining their vision, hoping, waiting, almost praying that a spark from the Carnegie steel works at Pittsburg, would fall in West Liberty, but so far we have been doomed to disappointment; yet our hearts are free from envy and we rejoice in the good fortune of our neighbors.

The library now contains 1,900 volumes, classified and cataloged according to modern methods. We subscribe for twenty-five periodicals. Our two mill levy amounts to nearly \$800 a year. Our current expenses, including the salary of the librarian, are about \$450 a year. We purchase a few books each month, believing this plan to be better than a large annual or semiannual purchase. Our reading room, especially the children's corner, is well patronized and is the object of our special pride. Our weakest department is the reference alcove, but we are steadily building this up by ignoring, to some extent, the popular clamor for new fiction.

The library trustees are: H. W. Hughes, president; W. S. Luse, secretary; Miss Linnie Harris, Mrs. A. C. Quier, E. C. Nichols, Prof. E. F. Schall, Miss Carrie McClun, J. C. Park, Dr. W. M. Long.

Librarian, Mrs. Lou Hauer.

WEBSTER CITY.

Mr. Kendall Young became a resident of Webster City, Iowa, in the year 1859. On the 9th day of March, 1894, he made his will, whereby the residue of his estate remaining after providing for the support of his widow during her lifetime, should be devoted to the establishment of a free public library in Webster City, Iowa, to be called the Kendall Young Library.

In his will he made Mr. J. W. Young executor of his estate, and appointed F. D. Young, J. W. Young, Samuel Baxter, W. J. Covil and E. D. Burgess trustees, for life, of the said library. They constitute the present library board and said will provides that their successors shall be elected by the people, at the regular municipal election, for a term of five years. E. D. Burgess is the librarian.

Mr. Young provided in his will that \$25,000 should be used for the construction of a fireproof library building, and \$10,000 for furniture and books.

Mr. Young died June 30, 1896. His will was duly admitted to probate. The executor accepted the trust, and Mrs. Jane Young, the widow, elected to take under and assist in carrying out the provisions of the will, in lieu of her statutory rights. A copy of the will was filed with the city clerk of Webster City; and November 16, 1896, an ordinance was passed by the city council accepting the gift, with and subject to all its terms and conditions.

The total amount to accrue to the library from the bequest of Mr. Young is estimated to exceed one hundred and seventy-five thousand dollars.

It soon became apparent to Mrs. Young that the income derived from the estate was more than she desired for her own use, and she proposed to the library trustees that the surplus income from the estate should be devoted to the immediate establishment and maintenance of the library. She also offered to give the use, for library purposes, of the Kendall Young residence, with its furnishings; and at the February, 1898, term of the district court, upon the joint application of Mrs. Young and the executor, it was ordered that the executor annually turn over to the library trustees the surplus income from the estate to be by them used for library purposes.

About eleven hundred books were purchased and the library was opened to the public July 27, 1898. The patrons of the library have free access to the books; the "Decimal" classification is used. The library has the ordinary form of dictionary catalog, on typewritten cards, and contains at the date of this report, 5,599 bound volumes.

The library has the following special collections:

The "*Jane Young Art Collection*." This consists of sixty-five bound volumes, presented by Mrs. Young. The perpetuation and growth of this collection are provided for by a special fund of \$2,600, given by her, the income from which is to be used for the purchase of books in this department which, by reason of their cost, can not ordinarily be purchased from regular library funds.

The "*Aldrich Collection*." This was given by Hon. Charles Aldrich, founder and curator of the Iowa historical collection at Des Moines, and contains more than four hundred volumes, many of them are luxuriously bound, devoted mainly to natural history and rare books. This collection is especially rich in works on ornithology.

The "*Landers Collection*." The gift of Capt. Frank E. Landers, of Webster City, Iowa. This collection contains about one thousand books, bound public documents, and pamphlets, relating almost entirely to the history of Iowa. Many of these books cannot now be procured and the collection is believed to be one of the best.

WINTERSET.

During the summer of 1890 the subject of organizing a public library in Winterset was discussed by a few of the citizens, resulting in the calling of a meeting in October of that year, at which meeting a committee was appointed to solicit for said purposes.

At a second meeting, November 24, 1890, S. J. Gilpin, chairman of the soliciting committee, reported a subscription of \$500 and a trust deed for a lot, which afterward sold for \$250.

It was therefore deemed advisable to organize permanently, which was done by adoption of constitution and by-laws, the election of officers and the appointment of librarian.

In January, 1891, the library was opened to the public. Many gladly availed themselves of the privileges, which were limited. One hundred and fifty books, with the necessary chairs, table, and a few other accessories, constituted the outfit. Periodicals and daily papers were well represented, and to that was attributed much of the success achieved. At the meeting November 24, 1891, reports were submitted by the librarian, treasurer, chairman of executive committee and chairman of library committee, indicating a steady advancement.

Until this time the library had been wholly supported by the generosity of citizens interested in its success. In December, 1891, it was voted to levy a tax of one mill upon the assessed valuation of the city for maintenance of the library, after which the Library Association turned over to the city all the property in possession of said Association, consisting of books, magazines, furniture and money, in the hands of the treasurer at that time.

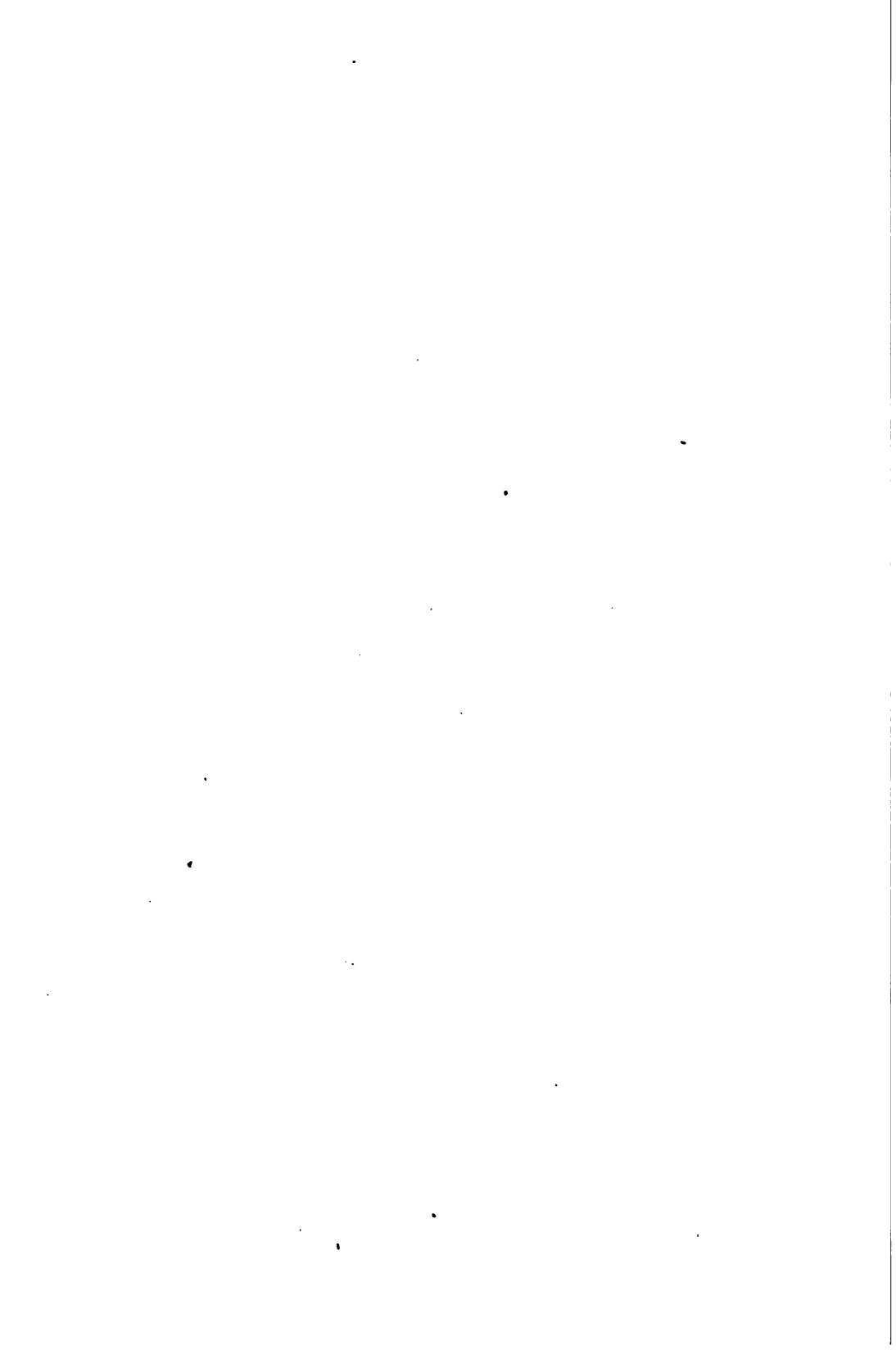
January 1, 1892, the library was formally delivered into the hands of the city. In July, 1898, the tax levy was increased to two mills.

The growth of the library has been steady and continuous, the interest of the public increasing with the years.

In November, 1901, they were compelled to move into a larger building on account of the crowded condition of the rooms. They still occupy a rented building, and have at present 3,700 volumes in the library.

The members of the present board of trustees are: Charles McMillan, president; W. J. Cornell, secretary; C. W. Koser, C. A. Robins, P. E. McClenahan, Mrs. J. W. Miller, Mrs. C. W. Eastman, Mrs. J. A. Guiher, Mrs. L. B. Wheelock.

Miss Mary Cassidy, librarian.





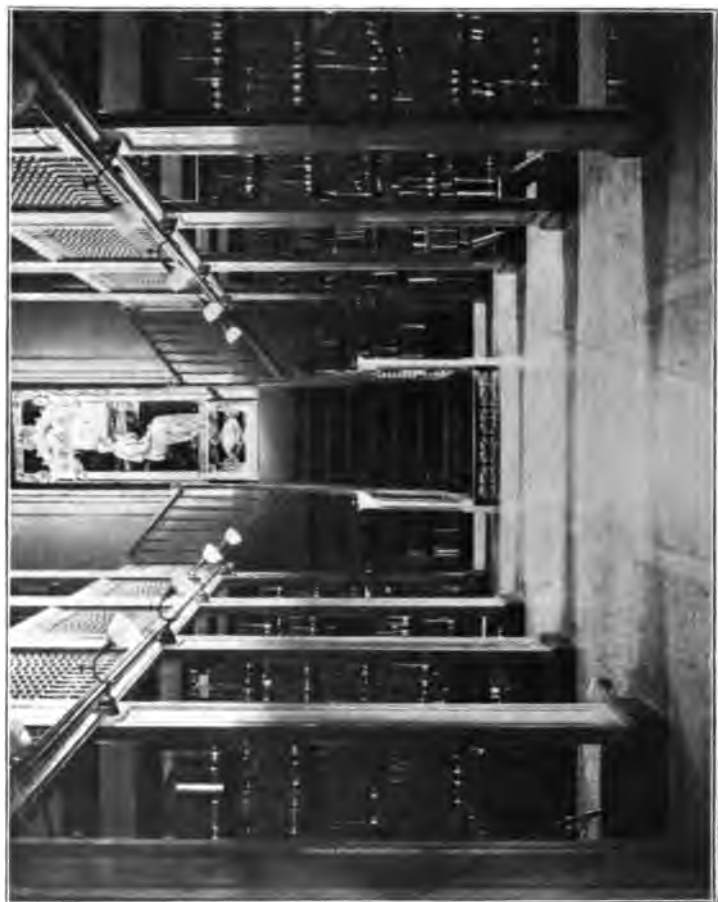
MUSCATINE PUBLIC LIBRARY-DELIVERY ROOM.



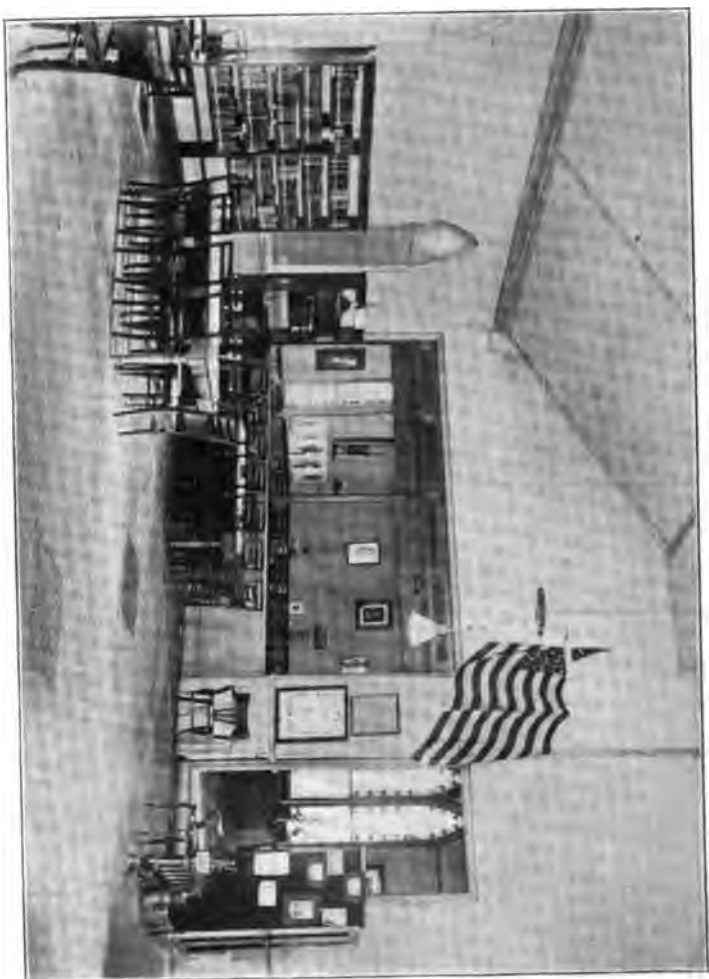
BOONE PUBLIC LIBRARY—CHILDREN'S CORNER.



BURLINGTON PUBLIC LIBRARY-REFERENCE ROOM.



BURLINGTON PUBLIC LIBRARY—STACK ROOM.



ONAWA PUBLIC LIBRARY—INTERIOR.



GRINNELL PUBLIC LIBRARY—INTERIOR.

APPENDIX.

APPENDIX.

FREE PUBLIC LIBRARY LAW OF IOWA.

CODE OF 1897 AS AMENDED.

SECTION 721. *Public Library.*—Cities and towns shall have power to provide for the formation and maintenance of a free public library, open to the use of all inhabitants, under proper regulations, and may purchase land and erect buildings, or hire buildings or rooms suitable for that purpose, and provide for the compensation of the necessary employees; may receive, hold, or dispose of any and all gifts, donations, devises and bequests that may be made to them for the purpose of establishing, increasing or improving any such library, and when the conditions of such gifts, donations, devises and bequests have once been accepted by the council the performance of such conditions may be enforced at the instance of the library board by mandamus and by other due process of law; and the council may apply the profits, proceeds, interest and rents accruing therefrom in such manner as will best promote the prosperity and utility of such library; but no money can be appropriated for such purpose until the electors of such city or town shall, at a general or special election, have voted for the establishment of such library.

SEC. 722. *Library Trustees.*—In any city or town in which a free public library has been established, there shall be a board of library trustees, consisting of nine members, to be appointed by the mayor, by and with the approval of the council. Of said trustees first appointed, one third shall hold office for two, one third for four and one third for six years, from the first day of July following their appointment; and, at their first meeting, shall cast lots for their respective terms, reporting the result of such lot to the council. Biennially thereafter, before the first day of July, the mayor shall appoint, by and with the approval of the council, three trustees to succeed the trustees retiring on the following first day of July, each of whom shall hold office for six years from such first day of July, and until his successor is appointed and qualified. Vacancies occurring in the board shall be filled by appointment by the mayor, such appointees to fill out the unexpired term for which the appointment is made. Bona fide citizens and residents of the city or town, male or female, over the age of twenty-one years, are alone eligible to membership. The removal of any trustee permanently from the city shall render his office as a trustee vacant. Members of said board shall receive no compensation for their services.

SEC. 723. *Powers.*—Said board of library trustees shall have and exercise the following powers: To meet and organize by the election of one of their number as president of the board, and by the election of a secretary and such other officers as the board may deem necessary; to have charge, control and supervision of the public library, its appurtenances and fixtures, and rooms containing the same, directing and controlling all the affairs of such library; to employ a librarian, such assistants and employees as may be necessary for the proper management of said library and fixing their compensation: but, prior to such employment, the compensation of such librarian, assistants and employees shall be fixed for the term of employment by a majority of the members of said board voting in favor thereof; to remove such librarian, assistants or employees by a vote of two thirds of such board for misdemeanor, incompetency or inattention to the duties of such employment; to select and make purchases of books, pamphlets, maga-

zines, periodicals, papers, maps, journals, furniture, fixtures, stationery and supplies for such library; to authorize the use of such libraries by non-residents of such cities and towns and to fix charges therefor; to make and adopt, amend, modify or repeal by-laws, rules and regulations, not inconsistent with law, for the care, use, government and management of such library and the business of said board, fixing and enforcing penalties for the violation thereof; and to have exclusive control of the expenditures of all taxes levied for library purposes as provided by law, and of all other moneys belonging to the library fund. Said board shall keep a record of its proceedings.

SEC. 780. *Library Fund* —All moneys received and set apart for the maintenance of such library shall be deposited in the treasury of such city or town to the credit of the library fund, and shall be kept by the treasurer separate and apart from all other moneys, and paid out upon the orders of the board of trustees, signed by its president and secretary.

SEC. 781. *Report* —Such board of trustees shall each year make to the council a report for the year ending December 31st, a statement of the condition of the library, the number of books added thereto, the number circulated, the number not returned or lost, the amount of fines collected, and the amount of money expended in the maintenance thereof during such year, together with such further information as it may deem important.

SEC. 782. *Library Tax*. —The board of trustees shall before the first day of August in each year, determine and fix the amount or rate, not exceeding two mills on the dollar in all cities and towns, of the taxable valuation of such city or town, to be levied, collected and appropriated for the ensuing year for the maintenance of such library; and in cities and towns, also the amount of rate, not exceeding three mills on the dollar of the taxable valuation of such city, to be levied, collected and appropriated for the purchase of real estate and the erection of a building or buildings thereon for a public library, or for the payment of interest on any indebtedness incurred for that purpose, and for the creation of a sinking fund for the extinguishment of such indebtedness; and shall cause the same to be certified to the city council, which shall levy such tax or so much thereof as it may deem necessary to promote library interests for each of said purposes so determined and fixed, and certify the per cent thereof to the county auditor, with the other taxes for said year.

The following library law and amendments to the Code were made by the Twenty-ninth General Assembly:

CHAPTER 85, SECTION 1. *Library Trustees Empowered to Condemn Real Estate*. —In any city or town in which a free library has been or may hereafter be established, the board of library trustees shall have the power to condemn real estate in the name of the city or town for the location and construction of library buildings and for branch libraries, and for the purpose of enlarging the grounds for such library buildings and branch libraries.

SEC. 2. *Condemnation Proceedings*. —Proceedings for condemnation of land as contemplated in this act, shall be in accordance with the provisions of the Code relating to taking private property for works of internal improvement, except that no attorney's fee shall be taxed or allowed for the owner of the real estate.

Section 988 of the Code regarding cities under special charter is repealed, and section 982 is amended so that the provisions of section 782 are made applicable to cities acting under special charter.

Section 1005, subdivision 6, regarding library tax is amended to meet the provisions of section 782.

An amendment to section 727 regarding gifts and bequests is included in that section of the law as printed above.

Section 128 regarding distribution of documents is amended to provide that there shall be delivered of various public documents "500 copies to the State Library for the use of the Library Commission to be used for library purposes, only after remaining copies have been distributed by the Secretary of State."

IOWA LIBRARY COMMISSION LAW.

As Amended by the Twenty-ninth General Assembly.

SECTION 1. Library Commission—Term—Chairman.—The Governor shall appoint four persons, at least two of whom shall be women, who, with the State Librarian and Superintendent of Public Instruction and President of the State University, shall constitute the Iowa Library Commission. The first members appointed by the Governor shall be appointed for terms of two, three, four and five years from the first day of July, 1900, and all subsequent appointments shall be for the term of five years, except appointments to fill vacancies. The Commission shall annually elect a chairman. (This section of the original law retained.)

SEC. 2. Duties of Commission.—The Commission shall give advice and counsel to all free and other public libraries, and to all communities which may propose to establish them, as to the best means of establishing and maintaining such libraries, the selection of books, cataloging and other details of library management. It may print such lists and circulars of information as it shall deem necessary and as approved by the Executive Council. It may also conduct a summer school of library instruction, a clearing house for periodicals for free gift to local libraries and perform such other public service as may seem to it for the best interests of the State.

SEC. 3. Traveling Libraries.—The State Library board shall transfer to the Iowa Library Commission all associate and traveling libraries belonging to the State, and the said Library Commission is authorized to accept the same; and it shall be the duty of said Commission to operate the said associate and traveling libraries, also to properly equip and circulate the books thus acquired or subsequently purchased to be loaned within the State to libraries, schools, colleges, universities, library associations, farmers' institutes, granges, study clubs, charitable and penal institutions and individuals, free of cost except for transportation, under such conditions and rules as shall protect the interests of the State and best increase the efficiency of the service it is expected to render the public.

SEC. 4. Secretary—Assistants—Duties—Expenses—Office.—Said Commission shall employ a secretary not of its own number, who shall serve at the will of the Commission, and under such conditions as it shall determine. It may also employ such other assistants as shall be requisite in the performance of the work of the Commission as set forth in sections two (2) and three (3), and number of assistants and their salaries and the salary of the secretary shall be fixed by the committee on retrenchment and reform. It shall be the duty of said secretary to keep a record of the proceedings of the Commission; to keep accurate accounts of its financial transactions, and to act under the direction of the Commission in supervising the work of the traveling libraries, in organizing new libraries and improving those already established, and in general to perform such other duties as may be assigned him by the Commission. In addition to his salary he shall be allowed his necessary traveling expenses while absent from his office in the service of the Commission, the same to be verified and certified and paid in the same manner as other expenses incurred by the Commission. Said Commission to have its office in the State Library, with storage and shipping room in the basement of the Capitol. The work in connection with the associate libraries shall be conducted by the Library Commission.

SEC. 5. Biennial Report.—The Secretary of the Commission shall make a full report to the governor on library conditions and progress in Iowa on July first, nineteen hundred three (1903), with sketches of the free public libraries and illustrations of such library buildings as said Commission may deem expedient; two thousand (2,000) copies of this report shall be printed—one thousand (1,000) of which shall be bound in cloth, and biennially thereafter a like report shall be made to the governor, two thousand (2,000) copies of which shall be printed, one thousand (1,000) of the same to be bound in cloth, these reports to be printed and bound by the State the same as other public documents, and to be distributed under the direction of the Commission, and such other printing and binding provided by this act shall be done by the State when allowed by the Executive Council.

SEC. 6. Reports From Libraries.—The Commission shall each year obtain from all free public libraries reports showing condition, growth, development and manner of conducting said libraries, and shall obtain reports from other libraries in the state at their discretion, and shall furnish annually to the Secretary of State such information for publication in the Iowa Official Register as may be deemed of public interest.

SEC. 7. Expenses—Appropriation.—No member of the Commission shall ever receive any compensation for service as a member, but the traveling expenses of members in attending meetings of the Commission or in visiting or establishing libraries; and other incidental and necessary expenses connected with the work of the Commission, shall be paid, including the necessary expense in the maintenance and extension of the traveling library system, provided that the whole amount of said expense and salaries shall not exceed the sum of six thousand dollars (\$6,000) in any one year, nor more than three thousand five hundred dollars (\$3,500) of said sum to be used in the payment of salaries and expenses of the Commission and Secretary. All bills incurred by the Commission or by its members under the law shall be certified by the President and Secretary of the Commission to the State Auditor, who shall issue warrants therefor upon the State treasury, and there is hereby annually appropriated from any funds in the State treasury not otherwise appropriated the sum of six thousand dollars (\$6,000) to carry into effect the provisions of this act, and any balance not expended in any one year may be added by the Commission to the expenditure for any ensuing year. All accounts and bills for expenses of the Secretary and members of the Commission and all bills for expenditures by the Commission, shall be itemized and verified and be audited and allowed by the Executive Council before being paid.

SEC. 8. Supplies.—That section 2390 of the Code and chapter 148 of the acts of the Twenty-seventh General Assembly be and the same are hereby repealed, and that section 198 of the Code be so amended as to add after the word "department," in the ninth line, the words "traveling library and Iowa Library Commission."

*SCHOOL DISTRICT LIBRARY LAW.

SECTION 1. The treasurer of each school township and each rural independent district in this State shall withhold annually, from the money received from the apportionment for the several school districts, not less than five nor more than fifteen cents, as may be ordered by the board, for each person of school age residing in each school corporation, as shown by the annual report of the secretary, for the purchase of books as hereinafter provided. When so ordered by the board of directors, the provisions of this section shall apply to any independent district.

SEC. 2. Between the third Monday of September and the first day of December in each year the president and secretary of the board, with the assistance of the county superintendent of schools, shall expend all money withheld by the treasurer as provided in section one (1) of this act, in the purchase of the books selected from the lists prepared by the State board of educational examiners as hereinafter provided, for the use of the school district; in school townships the secretary shall distribute the books thus selected to the librarian among the several subdistricts, and at least semiannually collect the same and distribute others.

SEC. 3. It is hereby made the duty of the State board of educational examiners to prepare annually or biennially lists of books suitable for use in school district libraries, and furnish copies of such lists to each president, secretary, and each county superintendent, as often as the same shall be published or revised, from which lists the several presidents and secretaries and county superintendents shall select and purchase books.

SEC. 4. It shall be the duty of each secretary to keep in a record book, furnished by the board of directors, a complete record of the books purchased and distributed by him.

SEC. 5. Unless the board of directors shall elect some other person, the secretary in independent districts and director in subdistricts in school townships shall act as librarian and shall receive and have the care and custody of the books, and shall loan them to teachers, pupils, and other residents of the districts, in accordance with the rules and regulations prescribed by the State board of educational examiners and board of directors. Each librarian shall keep a complete record of the books in a record book furnished by the board of directors. During the periods that the school is in session the library shall be placed in the schoolhouse, and the teacher shall be responsible to the district for its proper care and protection. The board of directors shall have supervision of all books and shall make an equitable distribution thereof among the schools of the corporation.

*Statistics regarding school district libraries are given in Report of Superintendent of Public Instruction for 1908.

EXPENDITURES OF THE LIBRARY COMMISSION.

During the period from July 1, 1900 (the date of the appointment of the Library Commission), to April 15, 1902 (the date of the revision of the Commission law), the annual appropriation for the Library Commission was \$2,000. The expenditures for this period (one year and nine and one-half months) were as follows:

Traveling expenses.....	\$ 803.40
Salaries.....	2,176.80
Printing.....	500.64
Supplies.....	114.44
Postage.....	70.00
Express, freight, etc.....	50.20
Summer School.....	79.75
Incidentals.....	13.31
Total expenditures.....	<u>\$3,808.54</u>

The Twenty-ninth General Assembly revised the Library Commission law April 15, 1902, transferring the Traveling Library from the State Library Board to the Iowa Library Commission and providing an annual appropriation of \$6,000. The expenditures from that date to July 1, 1903, the date of this report as fixed by law (one year and two and one-half months), were as follows:

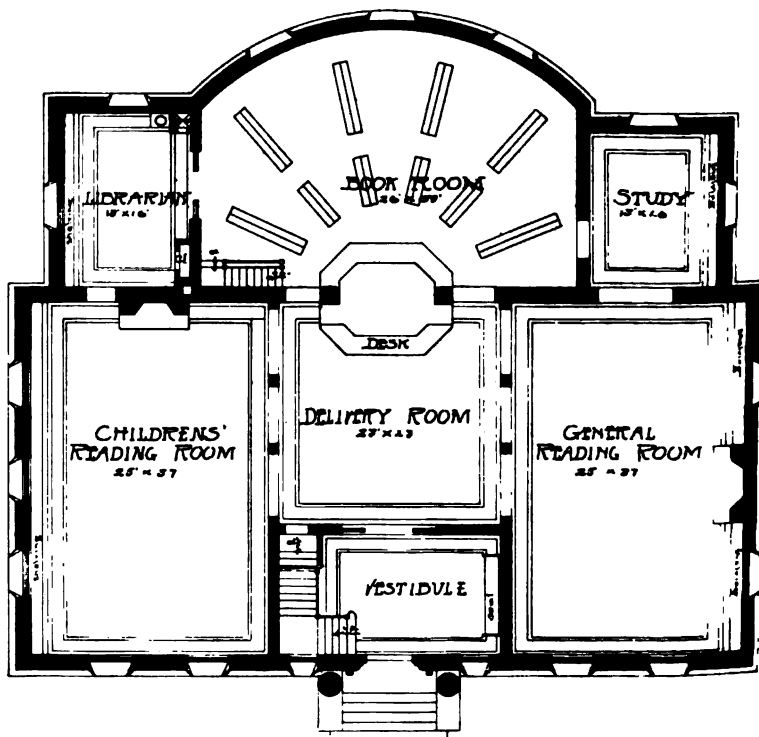
Books for Traveling Library....	\$2,175.19
Binding for Traveling Library.....	325.58
Shipping cases.....	33.00
Printing.....	173.80
Salaries.....	3,186.27
Traveling expenses.....	526.86
Summer Library School.....	219.63
Supplies.....	114.79
Express and freight.....	160.44
Incidentals (telegrams etc.).....	14.18
Total expenditures.....	<u>\$6,929.74</u>

Detailed report of expenditures is made to the Executive Council.

LIBRARY INTERIORS.

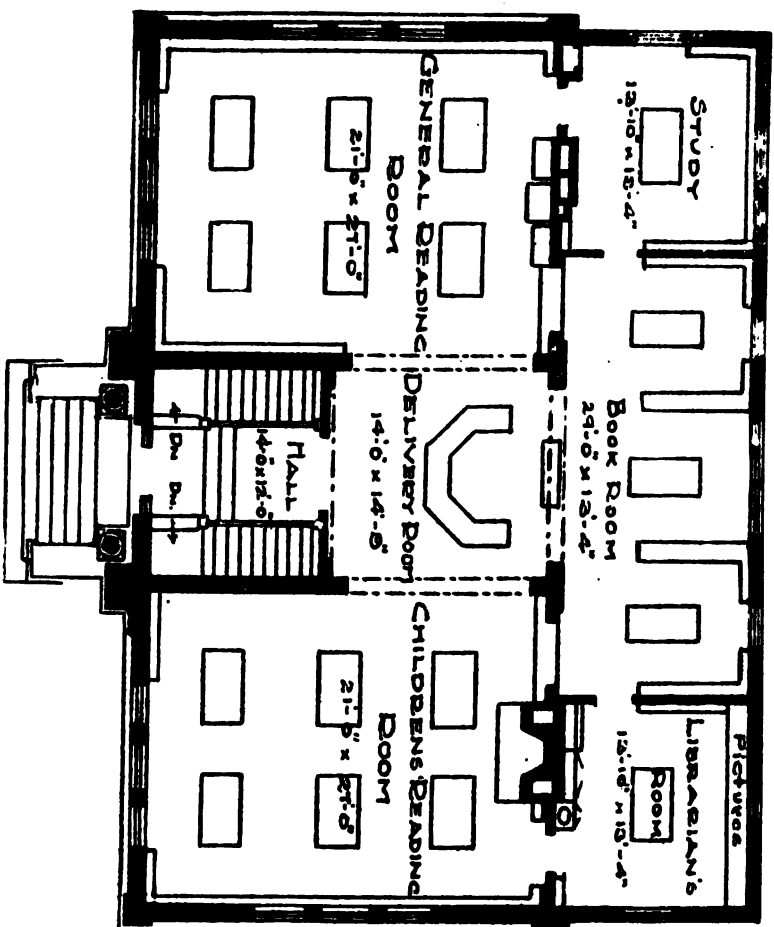
The interior arrangement of a library building is of vital importance to librarian and trustees. The architect *should* be acquainted with the needs of a modern library if he undertakes the planning of such a building, for the success or failure of the library building depends upon whether the plan is well adapted to the daily uses of the public and of the librarian, and whether it can be economically operated after it is built.

All the rooms in daily use should certainly be located on the main floor, and so arranged, with few partition walls, that the librarian may have supervision of the entire floor from her desk, which should be centrally located.

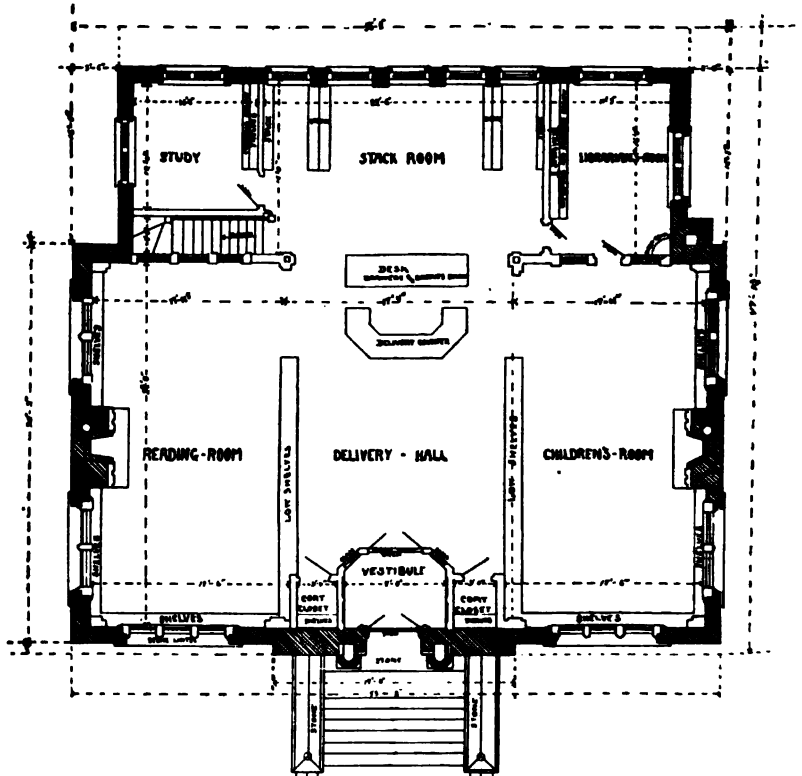


OSKALOOSA PUBLIC LIBRARY—MAIN FLOOR.

(F. E. Wetherell, Architect.)



CHARITON PUBLIC LIBRARY—MAIN FLOOR.



TIPTON PUBLIC LIBRARY—MAIN FLOOR.

Abundant light in the book room and reading rooms and ample wall shelving in *all* the rooms, with the books easily accessible to the people, are points which should not be overlooked.

The amount of money available for the building has much to do in determining what rooms should be provided in the basement (which should be high and well lighted), and what should be on the second floor, if there is a large enough amount available to erect a two-story building.

Herewith are given main floor plans of several Iowa library buildings, showing how the grouping of the rooms which are in constant use may be made on the main floor. No suggestions are made here as to building materials or exteriors, as a good architect should bring taste and experience in these matters to the service of the library board. The illustrations of library buildings in Iowa given with the preceding historical sketches in this report will be suggestive, as the cost of the building is given in most of these sketches.

The floor plan of the Onawa Public Library given herewith shows how a church or hall may be remodeled into a convenient and attractive library, and may be suggestive to those who have in view the arrangement of a single room.

Printed matter regarding library building and architecture is sent by the Iowa Library Commission upon request, and the Secretary of the Commission is glad to advise with library boards and building committees regarding the problems of interior arrangement.

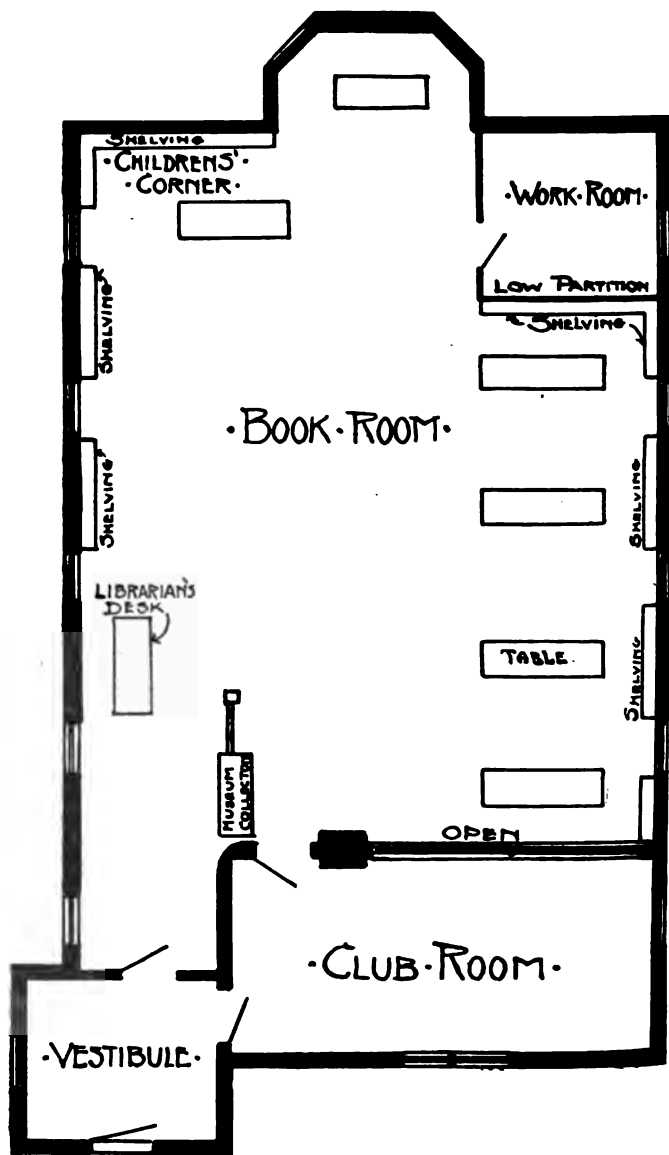
The following extract from a paper by W. R. Eastman, Library Inspector of New York state, gives general suggestions as to building:

"The rapid growth of a public library requires liberal provision for the future. The number of volumes and the annual increase for not less than twenty years should be carefully estimated and room provided.

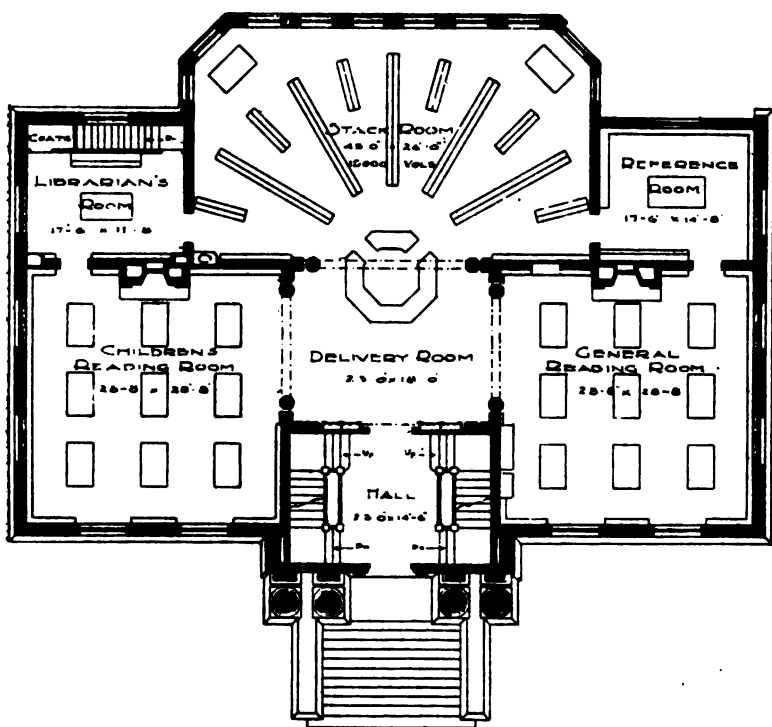
In general, the library building should have in front, two ample reading rooms with a wide passage between.

The central passage should end in the book room wide enough to overlap both reading rooms and having direct access to each. A delivery desk may be at the end of the central passage.

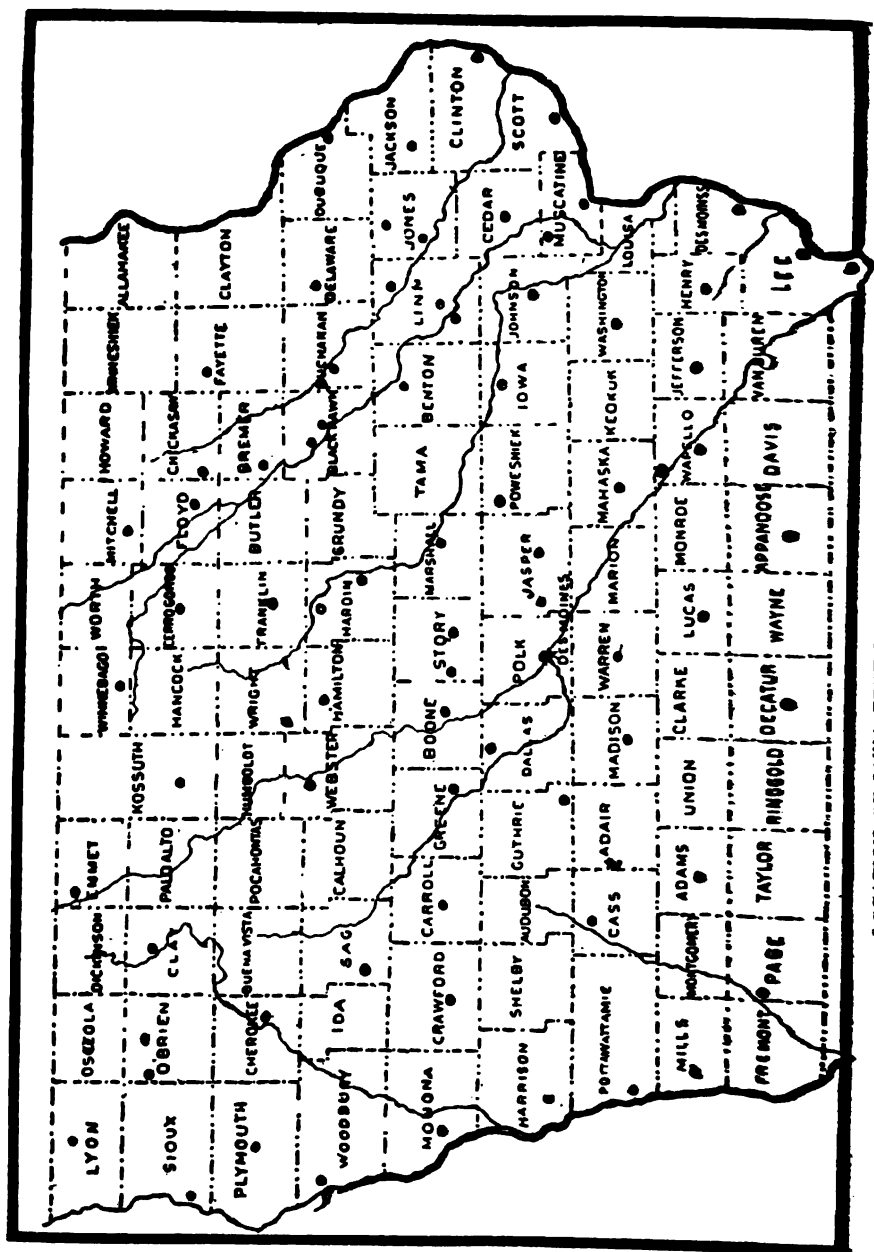
The size of the book room will depend on the estimated number of books. If the walls are insufficient for the needed shelves, a few double-faced bookcases may be placed on the floor five feet apart, ranging front to rear. An open space behind these cases, with small tables set between the rear windows, will give a convenient place for study or work. A librarian's room, closets or an extension of the reading room may fill out the spaces on each side of the book room so that the exterior side lines of the building shall continue to the rear line without break and thus secure the utmost economy of construction. The ceiling of the book room should be high enough (at least fourteen feet) to give room for two stories of bookcases when needed. It is desirable also to have the use of a dry basement under the book room (with direct stairway between) to hold the overflow of books not in much demand. This will be a great relief from overcrowding, and with the available space above the main floor will give the practical advantage of a stack of three stories."



ONAWA PUBLIC LIBRARY—REMODELED CHURCH.



MASON CITY PUBLIC LIBRARY—MAIN FLOOR.



LOCATION OF IOWA FREE PUBLIC LIBRARIES, JULY 1, 1908.

*LIBRARY STATISTICS FOR 1903.
FREE PUBLIC LIBRARIES—SUPPORTED BY MUNICIPAL TAX.

Number.	Town or City.	Name of Library.	Name of Librarian.	Year founded.	Volumes added, 1903.	Total volumes.	Circulation, 1903.	Annual income.	Expenses.				Hours open per week.	Persons employed.	
									Books and binding.	Periodicals.	Salaries, etc.	Paid.		Volunteer.	
1	Algona.....	Free Public	Elizabeth M. Horton	1899	217	4,508	14,088	\$ 970	\$ 81	\$ 50	\$ 780	80	..	..	
2	Ames.....	Free Public	Lorena Webber	1903	2,860	2,860	1,000	1,000	2,000	6	450	28	..	..	
3	Anamosa.....	Free Public	Cornelia McOarn	1903	902	902	1,800	1,800	500	80	1,000	28	..	..	
4	Atlantic.....	Free Public	Fearl Evans	1903	981	9,031	18,894	2,844	785	157	2,000	66	..	..	
5	Boone.....	Free Public	Bessie Morrill	1893	2,461	24,893	67,965	2,000	2,101	187	2,000	76	..	..	
6	Burlington.....	Free Public	Miriam H. Carey	1893	810	2,947	16,809	2,000	224	83	2,000	43	..	..	
7	Carroll.....	Free Public	Martha H. Bangs	1894	489	1,542	16,812	1,000	240	83	2,000	43	..	..	
8	Cedar Falls.....	Free Public	Bonnie H. Overman	1893	1,000	1,000	54,888	1,000	2,000	800	2,000	17	..	..	
9	Cedar Rapids.....	Free Public	Marjorie A. Wood	1890	1,000	1,000	1,000	1,000	2,000	800	2,000	17	..	..	
10	Centerville.....	Free Public	Lillian Ulrich	1902	289	4,008	900	1,000	1,000	100	1,000	17	..	..	
11	Central City.....	Free Public	Mrs. Howard Bliss	1898	283	1,800	14,879	1,000	1,000	100	1,000	17	..	..	
12	Chariton.....	Free Public	Margaret W. Brown	1893	230	1,000	10,000	1,000	1,000	100	1,000	17	..	..	
13	Charles City.....	Free Public	Margaret E. Ellis	1893	230	1,000	10,000	1,000	1,000	100	1,000	17	..	..	
14	Charlottesville.....	Free Public	Mrs. J. H. Burlingame	1890	511	8,899	11,799	1,119	1,000	50	200	6	..	..	
15	Clinton.....	Free Public	Edie Sweet	1903	972	1,447	5,088	100	..	..	..	..	..	..	
16	Clarksburg.....	Free Public	Florence Ogan	1901	870	2,447	5,088	100	..	..	..	..	..	..	
17	Corning.....	Free Public	Lottie Bryant	1901	870	2,447	5,088	100	..	..	..	..	..	..	
18	Council Bluffs.....	Free Public	Marjorie Dwyer	1903	970	24,801	5,088	5,000	7,720	78	4,000	30	..	..	
19	Davenport.....	Free Public	Marjorie Freeman	1903	18,400	18,400	44,888	5,000	7,720	78	4,000	30	..	..	
20	Des Moines.....	Free Public	Grace E. Meyers	1902	1,193	81,007	164,301	14,397	1,645	800	9,800	79	9	..	
21	Des Moines.....	Free Public	Ellis A. McLooney	1903	1,240	10,715	104,845	6,074	1,000	229	4,800	14	1	..	
22	Dubuque.....	Free Public	Belle V. Smith	1903	400	775	445	734	104	..	..	..	..	..	
23	Dubuque.....	Free Public	Charles A. Smith	1903	400	775	445	734	104	..	..	..	..	..	
24	Empire.....	Free Public	Charles A. Smith	1903	400	775	445	734	104	..	..	..	..	..	
25	Estherville.....	Free Public	Mrs. George Boyd	1894	487	8,908	12,178	1,000	100	87	800	88	1	..	
26	Exira.....	Free Public	Charles E. Harbock	1903	864	9,800	15,880	1,001	1,001	480	800	87	1	..	
27	Fairfield.....	Free Public	Mrs. H. H. Davidson	1900	580	10,007	9,842	2,002	408	36	1,307	81	1	..	
28	Fairfield.....	Free Public	H. M. Dwyer	1893	580	10,007	9,842	2,002	408	36	1,307	81	1	..	

*The delay in printing this report has made it possible to include the statistics for the year 1903, as prepared for the Iowa Official Register.

†Report for part of year only.

FREE PUBLIC LIBRARIES—CONTINUED.

Number.	Town or City.	Name of Library.	Name of Librarian.	Year founded.	Volumes added, 1908.	Total volumes.	Circulation, 1908.	Annual income.	Expenses.				Persons Em- ployed.	
									Books and binding.	Periodicals.	Salaries, etc.	Hours per week.	Paid.	Volunteer.
38	Forest City.....	Free Public.....	Pearl Balner.....	1899	899	1,009	9,980	\$ 600	\$ 300	\$ 50	\$ 250	88	.....	.....
39	Fort Dodge.....	Free Public.....	Mrs. J. M. Carpenter.....	1874	576	11,004	22,048	8,816	671	88	5,741	80	.....	.....
40	Fort Madison.....	Cattermole Memorial.....	Jennie Ingalls.....	1898	897	6,000	40,405	1,980	640	45	1,157	57	.....	.....
81	Glenwood.....	Free Public.....	Henrietta Lyon.....	1896	50	1,309	8,840	.....	75	.....	.....	9	63	1
82	Ginnell.....	Free Public.....	Mary E. Wheelock.....	1894	712	7,098	39,380	1,710	475	118	1,138	89	.....	.....
83	Hampton.....	Carnegie Free Public.....	Carrie O. Barker.....	1896	98	2,438	7,691	1,000	145	89	.....	10	.....	.....
84	Hawarden.....	Free Public.....	Jennie P. Smith.....	1901	170	1,047	4,886	1,585	82	18	847	10	.....	.....
85	Hawkeye.....	Free Public.....	Albert Ridley.....	1898	90	1,175	2,275	50	.....	.....	.....	4	.....	.....
86	Independence.....	Free Public.....	Effie Jacobs.....	1878	108	5,998	11,681	754	296	65	800	40	.....	.....
87	Indianola.....	Free Public.....	Hannah M. Babb.....	1894	219	4,710	18,850	1,072	173	94	2,018	42	.....	.....
88	Iowa City.....	Free Public.....	Adelaide C. Lloyd.....	1894	703	7,010	35,668	8,877	821	186	2,404	43	.....	.....
89	Iowa Falls.....	Free Public.....	Mrs. Florence Anders.....	1896	442	2,990	10,201	1,005	510	54	1,577	17	.....	.....
40	Jefferson.....	Free Public.....	Ida D. K. Head.....	1901	323	2,728	11,821	8,265	332	60	2,212	60	.....	.....
41	Keokuk.....	Free Public.....	Nannie P. Fulton.....	1898	644	14,220	54,936	1,816	350	515	2,897	54	.....	.....
42	LeMars.....	Free Public.....	Mollie E. Brown.....	1876	844	4,554	16,732	1,816	350	515	2,897	54	.....	.....
43	Leon.....	Free Public.....	Ida Brooks.....	1903	133	1,176	8,906	1,970	150	45	1,000	33	.....	.....
44	Manchester.....	Free Public.....	Mrs. Jennie Jones.....	1891	254	4,736	8,744	1,600	220	38	.....	45	.....	.....
45	Maquoketa.....	Free Public.....	Ida M. Simpson.....	1895	224	3,962	.....	1,000	.....	.....	.....	.....	.....	.....
46	Marengo.....	Free Public.....	Mary L. Parkhurst.....	1903	311	1,011	10,850	.....	186	25	865	30	.....	.....
47	Marion.....	Free Public.....	Ellen Howard Ray.....	1902	590	9,980	41,780	8,800	870	82	2,634	82	.....	.....
48	Marshalltown.....	Free Public.....	Mrs. A. H. Chapin.....	1892	599	4,237	20,188	2,569	818	95	1,119	81	.....	.....
49	Mason City.....	Free Public.....	Estella Turner.....	1893	250	2,200	8,513	280	895	15	1,180	12	.....	.....
50	Missouri Valley.....	Free Public.....	Mary Marvin.....	1891	250	2,200	8,513	280	895	15	1,180	12	.....	.....
51	Monticello.....	Free Public.....	Mrs. Louie A. Jones.....	1903	505	6,425	15,295	1,461	239	23	881	39	.....	.....
52	Mount Pleasant.....	P. M. Musser Public.....	Mrs. E. L. Mahlin.....	1872	1,589	6,472	51,690	8,962	1,968	149	2,856	70	.....	.....
53	Muscataine.....	Free Public.....	Fannie V. Eastman.....	1901	277	1,095	7,442	8,575	190	25	800	14	.....	.....
54	Nashua.....	Free Public.....	Kate E. Thompson.....	1876	154	4,772	7,895	1,573	163	45	300	24	.....	.....
55	Nevada.....	Free Public.....	Belle E. Smith.....	.....	662	4,241	16,734	816	552	87	1,285	15	.....	.....
56	Newtown.....	Free Public.....	Mrs. E. P. Pottenger.....	1898	138	1,875	7,734	900	1,284	90	2,000	31	.....	.....
57	Odebolt.....	Free Public.....	Maudie E. Oliver.....	1903	231	2,975	10,813	1,850	400	80	960	36	.....	.....
58	Onawa.....	Free Public.....	Mrs. Ella M. Stacy.....	1876	580	5,000	17,000	2,800	800	80	960	36	.....	.....
59	Pago Public.....	Pago Public.....	William H. Pickard.....	1903	231	2,975	10,813	1,850	400	80	960	36	.....	.....
60	Okonowoc.....	Free Public.....	Mrs. J. E. Dwyer.....	1876	580	5,000	17,000	2,800	800	80	960	36	.....	.....
61	Oskaugua.....	Free Public.....	Mrs. J. E. Dwyer.....	1876	580	5,000	17,000	2,800	800	80	960	36	.....	.....
62	Perry.....	Free Public.....	Mrs. J. E. Dwyer.....	1876	580	5,000	17,000	2,800	800	80	960	36	.....	.....

ASSOCIATION AND SUBSCRIPTION LIBRARIES.

Number.	Town or City.	Name of Library.	Name of Librarian.	Year founded.	Volumes added, 1908.	Total number volumes.	Number volumes circulated, 1908.	Annual income.	Amount paid for books and binding.	Cost of periodicals for reading room.	Salaries and all other expenses.	Hours open per week.	Persons employed.	
													Paid.	Un- employed.
1	Achley	Public	.....	1893	.....	600	.....	.....	.....	.....	.....	.....	.....	.....
2	Adena	Public	.....	1893	.....	2,000	.....	.....	.....	.....	.....	.....	.....	.....
3	Arnold's Park	Public	.....	1903	59	2,014	.....	.....	.....	.....	\$ 5	4	.....	.....
4	Arnold	Columbian	Emma Hallett	1903	59	1,800	.....	.....	.....	.....	.....	.....	.....	.....
5	Avoca	Public	F. G. Connerly	1909	919	1,869	2,685	.....	182	.....	50	4	.....	.....
6	Clear Lake	Public	Harrah Bowers	1903	53	1,800	2,593	.....	180	7	110	13	.....	1
7	Corvallis	Public	Lottie Sullivan	1903	175	1,835	2,500	.....	150	.....	25	.....	.....	.....
8	De Witt	Public	Elsie S. Saxton	1907	40	1,450	.....	450	60	10	800	.....	.....	.....
9	De Witt	Public	C. T. Curtis	1903	78	1,839	.....	.....	.....	.....	.....	.....	.....	.....
10	Emmetsburg	Reading Room and Library	W. L. Lovell	1903	80	1,000	.....	100	40	.....	40	.....	.....	.....
11	Garret	Ladies Library Association	Walter V. Greene	1903	400	1,880	4,100	108	150	.....	75	.....	.....	.....
12	Harlan	Public	Mrs. Charles Booth	1908	.....	1,400	.....	.....	.....	.....	.....	.....	.....	.....
13	Kingley	Library Association	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14	Laurens	Library Association	Mrs. E. C. Strain	1908	245	6,001	1,300	600	260	25	275	.....	.....	.....
15	Lyons	Young Men's Association	Jeannette F. Balch	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16	Macedonia	Library Association	Mrs. B. O. T. Chamber	1909	140	700	1,300	.....	80	.....	7	10	.....	.....
17	New Hampton	Library Association	Angelina Gabrielsen	1909	.....	1,833	.....	.....	.....	.....	.....	.....	.....	.....
18	Paton	Public	.....	1909	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19	Pella	Library Club	Sara M. Nollen	1908	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	Spirit Lake	Library Association	Frances M. Davis	.....	.....	1,910	.....	.....	.....	.....	.....	.....	.....	.....
21	Sutherland	Gen. N. B. Baker	Rosa Wheeler Woods	1914	35	2,000	100	100	40	5	.....	.....	.....	.....
22	Tama	Woman's Club	Mrs. F. A. Chase	1902	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
23	Village	Public	Frankie J. Baker	1909	135	585	1,519	149	80	.....	9	4	.....	.....
24	West Union	Public	Estella Barnes	1907	85	585	.....	.....	.....	.....	.....	13	.....	1

COLLEGE AND ACADEMIC LIBRARIES.

Number.	Town or City.	Name of Library.	Name of Librarian.	Year founded.	Volumes added, 1908.	Total volumes.	Number volumes destroyed, 1908.	Annual income.	Amount paid for books and binding.	Cost of periodicals for reading room.	Salaries and all other expenses.	Hours open per week.	Persons employed.	
													Paid.	Volunteer.
1	Cedar Rapids	Coe College	Mary L. Amidon	1881	800	4,554	1,767	\$ 500	\$ 200	\$ 25	\$ 268	...	1	...
2	Charles City	Charles City College	A. L. Haines	1891	...	1,880	...	...	148	19	...	2	...	1
3	Clinton	Warburg College	Prof. Kuhlmann	1888	40	2,820	720	150	...	...	...	...	...	...
4	College Springs	Amity College	Geo. M. Reed	1873	...	1,530	...	...	...	...	...	...	...	...
5	Davenport	St. Ambrose	...	1873	...	4,830	...	...	...	...	...	...	...	...
6	Decorah	Luther College	Chas. A. Naegele	1841	1,188	12,454	4,948	400	473	54	...	6	13	...
7	Decorah	Deborah Institute	Mrs. J. Breckenridge	1873	125	1,300	800	...	160	5	...	80	1	...
8	Des Moines	Grand View College	R. B. Vestal	1888	...	8,100	...	...	...	40	...	80	1	...
9	Des Moines	Des Moines College	Caroline E. Laird	1884	200	5,000	3,665	...	...	97	...	43	8	...
10	Des Moines	Drake University	Mary A. Carpenter	1884	401	7,818	...	...	568	...	...	...	...	...
11	Des Moines	Highland Park	...	1890	...	5,000	...	...	...	...	...	...	...	...
12	Dubuque	German Theological Seminary	Nicholas Steffens	1886	...	4,550	...	...	...	...	...	...	...	...
13	Dubuque	St. Joseph Academy	Sister of Visitation	1886	...	1,300	...	...	...	...	...	...	...	...
14	Dubuque	Academy of Visitation	Prof. M. Ren.	1871	87	1,887	...	250	160	...	...	4	...	...
15	Dubuque	Warburg Seminary	Helen I. Hanna	1884	65	8,000	886	80	56	82	11	40	1	...
16	Epworth	Epworth Seminary	Kate Hult	1884	88	8,888	...	...	1,540	59	...	80	...	...
17	Fairfield	Parsons College	P. H. Alderson	1867	841	10,086	1,867	500	863	...	...	60	8	...
18	Fayette	Upper Iowa University	...	1892	100	1,150	...	100	...	...	...	...	...	...
19	Fort Dodge	Tobin Commercial College	...	1892	...	...	...	2,700	900	235	1,680	80	1	4
20	Grinnell	Lenox College	M. H. Douglass	1848	1,155	80,822	8,100	...	240	...	875	60	1	...
21	Hopkinton	Humboldt College	Ella M. Kennedy	1888	188	8,440	3,000	500	...	...	...	...	...	...
22	Humboldt	Humboldt College	...	1886	...	...	...	...	...	...	...	...	...	...
23	Indianola	Stimpson College	Martha Stahl	1887	272	5,000	...	...	380	40	180	86	1	1
24	Jewell	Lutheran College	...	1898	...	3,886	...	...	...	...	...	...	...	...
25	Le Grand	Sumner College	C. B. Fortner	1898	60	1,000	681	...	...	...	...	...	...	...
26	Le Mars	Western Union College	Emma Schneider	1900	127	818	...	158	105	...	70	24	2	...
27	Mt. Pleasant	Iowa Wesleyan University	M. Blanche Swan	1890	455	8,985	1,543	528	98	49	877	86	1	...
28	Mt. Vernon	Cornell College	May Fairbanks	1887	1,572	24,101	15,838	...	...	249	...	48	2	...

*Burned during the year.

COLLEGE AND ACADEMIC LIBRARIES—CONTINUED.

Number.	Town or City.	Name of Library.	Name of Librarian.	Year founded.	Volumes added, 1908.	Total number of volumes.	Number volumes circulated, 1908.	Annual income.	Amount paid for books and binding.	Cost of periodicals for reading room.	Salaries and all other expenses.	Hours open per week.	Persons employed.	
													Paid.	Volunteer.
29	Orange City	Repulse	E. J. Strick	1883	45	2,800	1,000	\$ 75	\$ 45	\$ 20	...	7	...	8
30	Osgo	Cedar Valley Seminary	Ohio M. Wedge	1893	200	3,200	...	800	...	43	...	40	...	1
31	Oskaloosa	Penn College	S. B. Laughlin	1878	200	6,200	...	...	...	25	...	48	2	1
32	Pella	Central University of Iowa	W. A. Young	1863	1,000	6,800	...	200	150	25	\$ 45	35	...	7
33	Salem	Whittier College	...	1856	...	800	400	350	800	70	...	36	1	...
34	Shenandoah	Western Normal College	L. H. Mattox	1882	287	2,351	...	...	...	...	...	...	...	...
35	Sioux City	Morningside College	Rev. Daniel Williams	1900	200	3,500	800	600	525	60	40	40	...	...
36	Storm Lake	Buena Vista College	H. E. Avery	1891	300	12,591	800	500	25	55	450	83	1	3
37	Tabor	Tabor College	H. W. Ward	1886	63	3,212	...	175	62	25	73	18	2	2
38	Toledo	Western College	T. F. Tobin	1886	25	1,200	400	...	...	...	...	...	...	...
39	Vinton	Truford Academy	...	...	...	...	...	...	...	...	...	...	...	...
40	Wilton	Wilcox German-English College	...	...	...	...	...	...	...	...	...	...	...	...

MISCELLANEOUS LIBRARIES.

1	Atlantic	James K. Powers (I. O. O. F.)	Newton B. Parvin	1844	...	2,070	...	\$ 308	\$ 141	...	...	63	2	...
2	Cedar Rapids	Masonic	Frank Kurka	1868	81	21,000	1,186	...	...	...	\$ 16	4	...	...
3	Cedar Rapids	Bohemian Reading Room	Lewis Block	...	...	10,100	...	...	...	...	...	...	...	...
4	Davenport	James Grant Law	C. E. Harrison	1867	45,272	8,000	2,000	...	100	12	48	4	1	...
5	Davenport	Academy of Natural Science	W. J. Wunder	...	...	1,438	...	\$ 102	60	...	...	30	...	...
6	Davenport	Turner Bibliothek	A. L. Brown	1855	143	857	...	...	...	...	...	...	...	...
7	Fort Dodge	Webster County Teachers	Amanda Elliott	1887	...	...	...	...	...	...	...	...	...	...
8	Fort Dodge	I. O. O. F.	...	...	...	...	...	...	...	...	...	...	...	...
9	Keokuk	Bar Association	...	...	...	...	...	...	...	...	...	...	...	...
10	Lamoni	Reorganized Church of Latter Day Saints Teachers	L. A. Smith	1865	100	1,872	400	150	150	...	...	86	...	...
11	Sioux City	...	Mrs. Leola Cameron	1890	100	...	400	60	...	...	...	9	...	...
12	Trenton	Henry County Institute of Science	Mrs. Carrie Morrison	1896	25	1,400	842	...	25	...	...	2	...	...

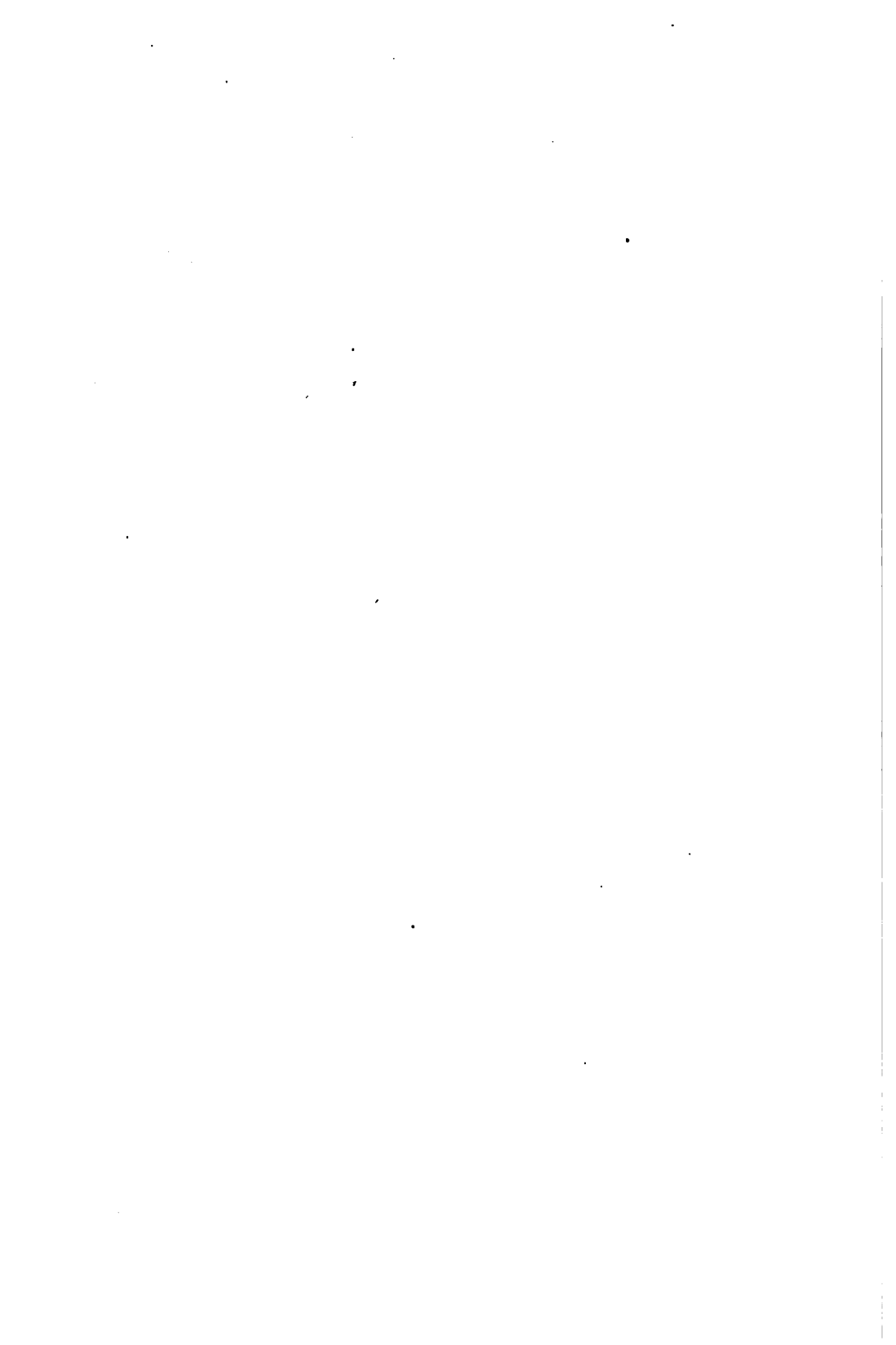
LIBRARIES SUPPORTED BY THE STATE.

Number.	Town or City.	Name of Library.	Name of Librarian.	Year founded.	Volumes added, 1903.	Total number of volumes.	Number of volumes circulated, 1903.	Annual income.	Amount paid for books and binding.	Cost of periodicals for reading room.	Salaries and all other expenses.	Hours open per week.	Persons employed.	
													Paid.	Volunteer.
1	Annes.....	Iowa State College.....	Vina E. Clarke.....	1899	1,000	17,000	20,965	\$3,500	\$1,450	\$350	\$1,700	30½	4	2
2	Anamosa.....	State Penitentiary.....	Chaplain.....	1897	420	6,665	84,100	8,500	1,500	128	2,000	52	3	2
3	Cedar Falls.....	Iowa State Normal School.....	Anna M. Baker.....	1876	1,315	15,967						8		
4	Clarinda.....	Hospital for Insane.....	Lizzie Giblin.....	1894	20	1,018								
5	Davenport.....	Iowa Orphans' Home.....		1893		2,000								
6	Des Moines.....	Iowa State Library.....	Johnson Brigham.....	1889		79,629								
7	Des Moines.....	Traveling Library.....	Ia. Lib. Commission.....	1896	1,586	11,890	16,455							
8	Des Moines.....	Historical Department of Iowa.....	Charles Aldrich.....	1892		11,754								
9	Des Moines.....	Department of Agriculture.....				2,000								
10	Des Moines.....	State Horticultural Society.....	Wealey Green.....	1896	50	1,162			100	10	2,500	54	2	
11	Des Moines.....	State Board of Health.....	Dr. J. F. Kennedy.....	1881		2,500						36		
12	Des Moines.....	Superintendent of Public Instruction.....				4,000						66		1
13	Eldora.....	Industrial School.....	B. J. Miles.....	1882	585	2,265	2,877		648	45	90			2
14	Fort Madison.....	State Penitentiary.....	A. H. Jessup.....	1885	800	7,000	420		970	25				
15	Glenwood.....	Iowa Inst. for Feeble-Minded Children.....	George W. Smith.....		62	870			75					
16	Independence.....	Hospital for Insane.....	Margaret Budington.....	1897	8,000	30,000		7,250	7,100	175	4,263	39	2	
17	Iowa City.....	State Historical Society of Iowa.....		1856	4,000	65,920			1,025	28	476	54	6	4
18	Iowa City.....	State University.....	M. L. Ferson.....	1866	839	11,217		1,225						
19	Iowa City.....	State University of Law.....	George Terry.....	1880	10	2,060	2,970	120		30	150	84	1	
20	Marshalltown.....	Iowa Soldiers' Home.....				4,112								
21	Mt Pleasant.....	Hospital for Insane.....		1890	33	2,407			48					
22	Vinton.....	Iowa College for Blind.....	T. F. McCune.....											

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SIXTEENTH ANNUAL REPORT

OF THE

STATE DAIRY COMMISSIONER

TO THE

GOVERNOR OF THE STATE OF IOWA

FOR THE YEAR 1902.

H. R. WRIGHT,
State Dairy Commissioner.

PRINTED BY ORDER OF THE GENERAL ASSEMBLY.

DES MOINES:
BERNARD MURPHY, STATE PRINTER,
1902.

LETTER OF TRANSMITTAL.

To his Excellency, Albert B. Cummins, Governor of Iowa:

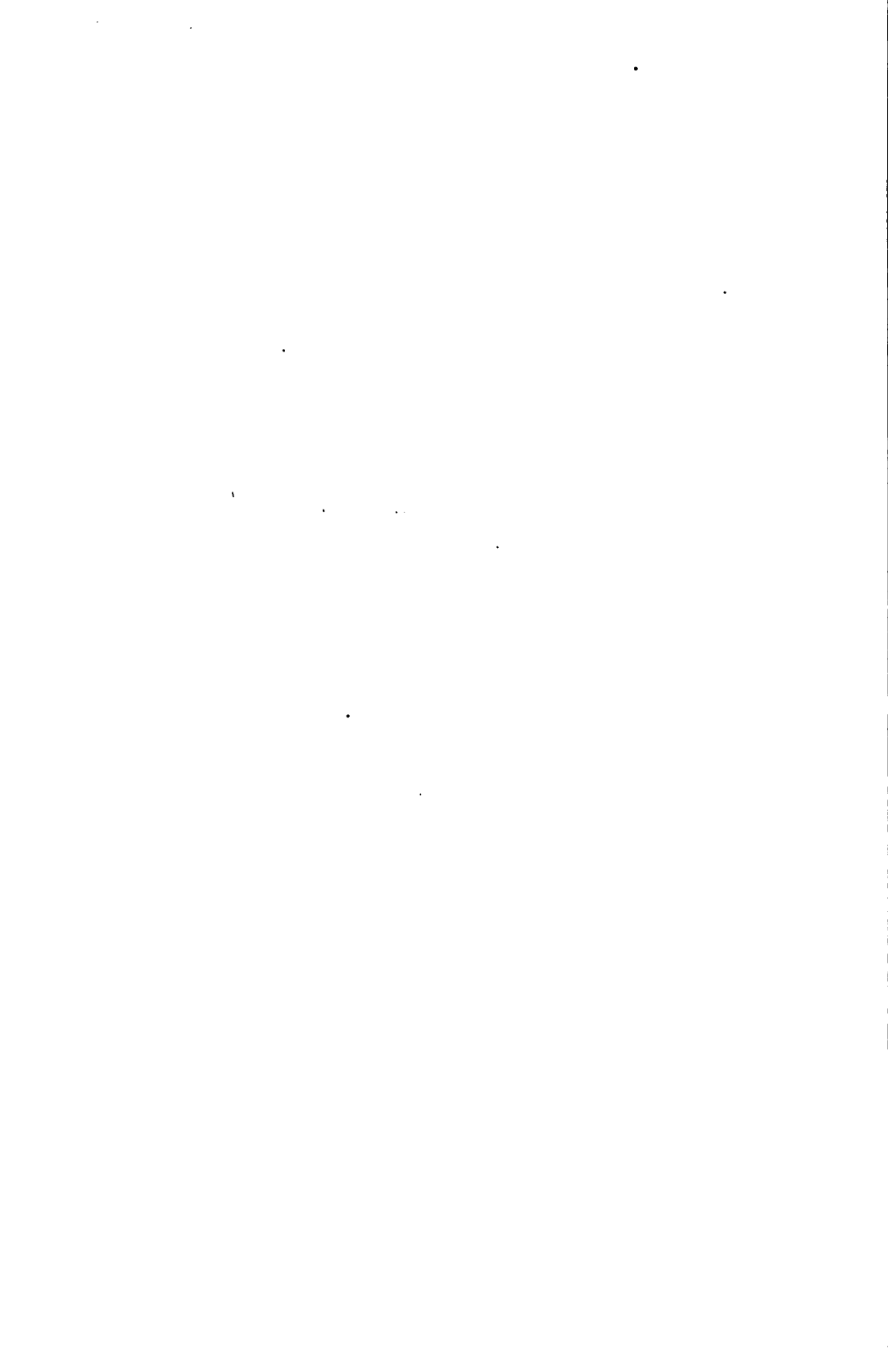
SIR—In compliance with the law, I have the honor to submit herewith the Sixteenth Annual Report of the Dairy Commissioner.

Very respectfully,

H. R. WRIGHT,

Dairy Commissioner.

Des Moines, November 1, 1902.



EXPENSE OF OFFICE OF DAIRY COMMISSIONER FOR THE YEAR ENDING NOVEMBER 1, 1902.

Dairy commissioner's salary.....	\$ 1,500.00	
Dairy commissioner's expense	497.09	
Total		\$ 1,997.09
Deputy dairy commissioner's salary.	\$ 1,000.00	
Deputy dairy commissioner's expense	144.02	
Total		1,144.02
Assistant dairy commissioner's salary.. ..	\$ 1,000.00	
Assistant dairy commissioner's expense—ten months	726.21	
Total		1,726.21

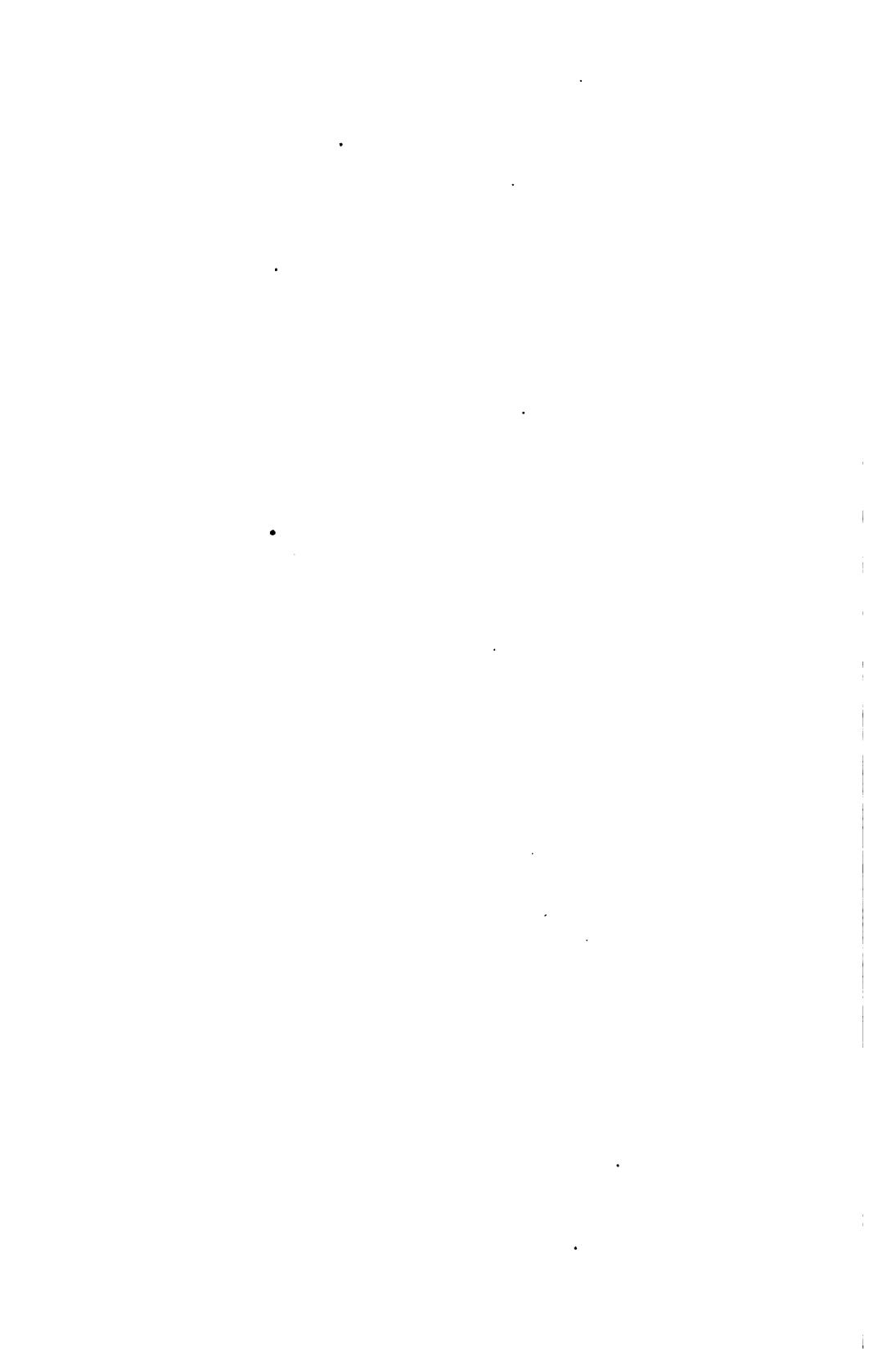
EXPENSE OF MILK INSPECTION IN FOURTEEN CITIES—

Milk agents' fees.....	\$ 2,064.00	
Milk agents' expense.....	128.85	
Milk agents' special work.	68.75	
Total.....		2,259.10

OFFICE EXPENSES—

Printing dairy law	\$ 86.50	
Legal Expenses.	80.00	
Analyses	50.25	
Milk testing machines	56.00	
Miscellaneous	14.12	283.87
Office help		95.00
Express and freight.		79.88
Telegraph and telephone.....		6.25
Total		\$ 7,594.87
Less salaries.....		8,500.00
Total expenditures from appropriations		\$ 4,094.87
Average monthly expenses. . .		841.19

NOTE—Salaries are not paid from the specific appropriation. The amount appropriated for the biennial period beginning April 1, 1902, was \$9,000.00, of which has been expended in seven months, to November 1st, \$2,498.75.



DAIRY COMMISSIONER'S REPORT.

The creamery statistics herein contained are for the year ending May 1, 1902. The amounts of butter made and sold are strictly for that period, but the items showing number of cows, patrons, hand separators and other details of creamery management are naturally given according to the circumstances existing at the time the report was made.

The falling off in the make of butter, and the number of patrons and cows was to be expected, as was the increase in number of creameries closed. Every year a number of creameries, which is too large a percentage of the whole number, are closed in Iowa, some of them permanently, others of them to be reopened at later date and again added to the list of creameries of the state. A creamery cannot be successfully operated unless it has at least 500 cows and can make above 60,000 pounds of butter. The average make of butter for the creameries of the state is 104,152 and a great many creameries, of course, make a good deal less than this amount. It is evident that a creamery may be able to run when it can make 60,000 pounds and not be able to run when it can get the material to make but 50,000, for the expense in either case will be almost the same, and in the latter case will be above the maximum possible for the successful operation of the creamery. The concentration of the industry at large churning plants like the one at Sioux City, the introduction of the hand separator and the shipping of the cream instead of sending it to the local factory, or any local dissatisfaction with the creamery, is enough to close up a plant that is making close to the minimum amount of butter, for any of these causes may reduce the amount of its product below the line of possible profit. The larger factories manufacture the butter for about a cent a pound while the factory making but 60,000 pounds can scarcely make up the butter for less than three cents. Then the larger factory will be able to sell its butter without commission and hence get a larger net return than the smaller one. The hand separator makes the

farmer entirely independent of the local creamery for he can ship his cream as easily as he can ship any other perishable product, and the express companies make very low rates to stimulate that kind of shipments. The hand separator enlarges the territory possible to be covered by a creamery and so increases the competition between neighboring creameries to the detriment of the smaller. Naturally, when a small factory is closed up by competition of the sort suggested, not all of its patrons are in a position to obtain a market for their milk or cream, and so the total make for the locality is decreased. These reasons account, in part, for the decrease in the number of creameries and the decrease in the amount of butter made.

Another reason for the falling off in our product has been the disastrous season for the months beginning with the drouth of the summer of 1901, and the exceedingly high price of feeds last winter which made dairying exceedingly unprofitable, even under the best conditions then prevailing. So that the falling off in butter made and in the number of creameries in operation is not at all unexpected or lacking explanation, and does not indicate any permanent lack of interest in dairying in the state. The number of new plants erected was in excess of the number erected the previous year, and, no doubt, another summer will add greatly to the list of active and successful creameries.

Too much of the time of this department is taken up in collecting statistics from the creameries. It seems to be impossible to get returns with anything like promptness from a number of the creameries of the state. It is the intention of the commissioner to send out the blanks for reports next year on July 1st instead of May 1st, and then to insist that the reports be made promptly, and, if necessary, to take advantage of the law which provides a penalty for not reporting promptly.

For a number of years we have taken great pride in the fact that the state has more creameries than any other state, and have neglected to notice that the product per cow is only 135 pounds of butter. We have been proud of the fact that every year sees a large number of new creameries started, and have forgotten that almost or quite as many have been closed. The increase in butter making in this state could profitably come from an increase in the number of cows per patron and in the increased product of the cows we now milk. The butter made in Iowa could easily be doubled without increasing the number of patrons, and almost without increasing the total number of cows

tributary to the creameries. The average creamery patrons have seven cows and they make 945 pounds of butter, and the average ought to be twice as many cows and the butter produced at least three times as much as it is. Efforts to increase should be made along these lines rather than along the lines of increasing the number of creameries or developing new territory. The operators of the smaller creameries ought to see this point very clearly, for an increase of patronage is a much greater proportionate increase in profits, for the reason that the expense is not much different whether his creamery makes 50,000 pounds or 100,000, and if it is making the large amount, he can stand a considerable decrease if it cannot be avoided, while if he makes the smaller amount, any decrease will put him out of business and make his investment of little value. This same principle should appeal to the managers of larger creameries, since the more butter made the less expense per pound to manufacture it. The dissatisfied patron is the one who is not making any money out of his cows, and the wise creamery man will serve his own interests best if he will assist the farmer to increase his profit and so make him an earnest adherent of the creamery.

A few creameries of the state are pursuing the plan of sending out to all patrons at the end of each month a circular letter showing in detail the business of the concern, especially giving the test of each patron's milk and the total yield of butter and prices paid for same. There is no danger that the patrons will know too much about the running of the creamery if the manager is doing a square business. Such a letter can easily be prepared and sent out without expense and the result cannot but be beneficial to the creamery.

The dairy commissioner hopes to attend a large number of the Farmers' Institutes of the state this winter and assist in developing dairy sentiment among the farmers, but the butter maker and manager of the creamery can do this sort of work much more effectually than any one else, and ought to be interested in it much more than any one else. The most successful creameries in the state are managed on the theory of not only making the patron satisfied, but also to help him make more money from his dairy. There certainly is no better theory on which to operate a successful creamery.

A number of County and District Butter Makers' Associations have been organized during the last season and others will be

organized as soon as possible. The officials of the State Dairy Association have been especially active in perfecting these organizations, and have been assisted by others interested in the advancement of the interests of the butter makers. These associations are run for mutual improvement and for the purpose of having butter scored and criticised by an expert, and the remedies for its faults pointed out. Butter makers having the opportunity ought to take advantage of it to have their butter criticised at these meetings and the state fair, and at every other opportunity, so that they may constantly know the faults of their butter and the proper methods of remedying them. Then at the national and state conventions they will not be found with scores in the neighborhood of eighty points.

Prof. McKay intends to conduct an all year's scoring contest at the college at Ames beginning in January, which will be done at slight expense to the buttermaker. The assistant commissioner will be present at these scorings, and will then put in his time at the creameries from which the poorest butter comes, assisting in removing the causes of the faults. It is hoped that a very large number of butter makers of the state will send butter to the college according to the plans of Prof. McKay, which will be more fully published in the dairy press.

Discussions of other matters of interest will be found elsewhere in this report in connection with the various statistical tables.

PROSECUTIONS.

The number of prosecutions conducted by this department is relatively small. The amount of oleomargarine sold in the state, however, is little, and hence, there is no opportunity for a large number of oleomargarine prosecutions. Seven prosecutions have been conducted in the city of Ottumwa against railway contractors, who had in their possession for the purpose of feeding their men yellow oleomargarine, contrary to the laws of the state, and of these prosecutions six resulted in the payment of fines, and the seventh defendant is now under bonds to appear before the grand jury.

A number of complaints are made to this office every year alleging that the retail milk dealers of the various cities are selling milk in which a preservative has been placed. Late in

September one of the prominent milk dealers in the city of Ottumwa was arrested for this sort of an offense and was fined \$25.00 and costs by Justice J. A. Ballard. The presence of preservatives in milk is easily detected by a competent chemist. It is the desire of this department to prevent, as nearly as possible, the retail sale of milk in which a preservative is present, and city milk dealers should take notice that detection of these preservatives is easy and that the dairy commissioner will be obliged to prosecute any dealer in whose milk a preservative is discovered. The commissioner is of the opinion, however, that very little preserved milk is sold in any of the cities in which milk inspection is carried on by this office.

WORK OF ASSISTANT DAIRY COMMISSIONER.

During the last eleven months the assistant dairy commissioner has visited 175 creameries, skim stations and cheese factories of this state. The work of the assistant commissioner has been mainly along the line of inspecting the milk as it comes to the creamery and notifying the owners of milk that is not up to standard, with the hope of inducing them to furnish a better product in cans that are uniformly clean. He has inspected and reported upon the cleanliness of the creamery and its appurtenances and has insisted, in a number of cases, that immediate steps be taken to remedy certain defects which he had discovered and pointed out to the management. A large number of the creameries of the state are old creameries, the buildings having been erected at a time when creamery building was not so well understood as now, and the result is that these older plants are wearing out and are not easy to keep clean. A good many of them were built upon the lowest ground in the community and, hence, drainage is extremely difficult, and in some cases impossible. The creamery drain is in too many cases the source of foul smells which saturate the creamery and are absorbed by the milk and cream and butter. The drain should have in it near the creamery a trap which will prevent the odors from arising from the drain, and in case this is impracticable, the liberal use of some of the odorless disinfectants now upon the market is recommended and urged. The law requires the operator of a creamery, or cheese, or condensed milk factory to

maintain his premises in a clean and hygienic condition. Because this is difficult to do, is no excuse for not doing it; and notice is hereby given that from the time of the publication of this report, this department will devote a portion of its time and efforts toward prosecuting the management of those creameries which are not in the best condition possible, under the circumstances as found in the several creameries. The very large majority of Iowa's creameries are maintained in a clean and hygienic condition, as required by law, but a few operators of creameries seemingly have no regard either for the statutory law or the unwritten law of cleanliness.

Creameries that are about to rebuild can obtain useful information by addressing this office.

The assistant commissioner reports that a large number of butter makers are using starters "sometimes," or "a part of the time;" also that a number use "skimmed milk" or "butter-milk" starters. The butter maker should do one of two things: He should either use a starter all the time or not at all. The successful use of a starter requires a kind of skill on the part of the butter maker which is acquired only by constant practice in the use of a certain kind of starter. The butter maker will not discover anything new by experimenting with various kinds of starters under various conditions. By writing to Prof. McKay at Ames he will be able to find out, at the cost of a postage stamp, all that he can possibly learn by any experiments he may conduct. The principles of the use of starters are well understood by such experts as Prof. McKay, and the butter maker should use his knowledge. The use of skimmed milk or buttermilk starter is not recommended by dairy experts, although good results may be obtained therefrom by some butter makers. The commercial starters are uniform and if properly handled in accordance with the directions of their manufacturers will almost invariably produce the desired results, while the use of a skim or buttermilk starter may or may not produce the desired results, depending upon the kind of bacteria that were in the milk to begin with, if butter makers have the skill to select a proper skimmed or buttermilk starter.

The only desirable cream vat is one that will quickly reduce the temperature of the cream and certainly hold it at the proper temperature after that has been secured. The proper ripening of cream depends largely upon the butter maker's ability to control the temperature and to change the temperature of the

cream in a relatively short time. A very great improvement would be made in a number of creameries if the vats now in use could be replaced with vats of modern construction which can and will control accurately the temperature of the cream.

The assistant dairy commissioner will be sent to any creamery desiring the services of an expert, without expense to the creamery. A considerable number of requests for a visit from the assistant commissioner have been received and so far as possible the desired aid has been given. It is very much regretted that the law authorizes the appointment of but one assistant commissioner, and it is evident that the number of creamery visits possible to be made by him is very far short of what ought to be done among the creameries of Iowa, and what might be done if this department had the proper number of men.

OLEOMARGARINE.

If the sale of oleomargarine in other states was no more in proportion than its sale in Iowa, bogus butter would not occupy a great deal of the time or attention of dairy officials or dairymen. It is true that every year small quantities of oleomargarine are discovered in this state, and that there have been for a number of years some slight attempts to dispose of oleomargarine in Iowa, but the conditions are such that but little of it has ever been sold. While this is true, it is no cause for congratulating ourselves, for the reason that the oleomargarine sold in Illinois and other states competes for the market with the large quantities of butter that this state ships, and hence, has the same effect upon our dairy interests as it would if larger quantities of oleomargarine were sold in this state. We are, therefore, just as vitally interested in controlling the sale of oleomargarine in other states, as we are in preventing its sale within our own state. Since the passage of our present state law relating to the sale of "substitute for butter," there have been scarcely any licenses issued to Iowa grocers for the sale of oleomargarine, and nearly all that has been sold or used in the state has been purchased by managers of railway boarding houses, or similar institutions, direct from the manufacturers in Kansas City, Chicago or Omaha. The United States law, which went into effect July 1, 1902, provides that a retailer of colored oleomargarine shall pay

\$48.00 a year license fee, and that the dealer in oleomargarine "free from artificial coloration that causes it to look like butter of any shade of yellow" shall pay a license fee of only \$6.00 a year. This reduction of the license fee in the case of dealers in oleomargarine in uncolored oleomargarine will evidently cause a number of dealers to attempt the sale of the uncolored article in this and other states. There are at this writing, November 1st, nine licensed dealers in Iowa, but it is not known how much success they are having in disposing of the uncolored article. Doubtless other licenses will be issued later, and a vigorous attempt will be made to encourage the sale of uncolored oleomargarine, both by the manufacturers and wholesalers, and by the retailers who may be induced to take out the licenses.

On the 26th of May, 1902, the following letter was received by the dairy commissioner:

KANSAS CITY, U. S. A., May 26, 1902.

B. P. Norton, Dairy Commissioner, Des Moines, Iowa:

DEAR SIR:—You are doubtless more or less familiar with the oleomargarine law, which becomes effective July 1st. We have not been pushing the sale of butterine in your state for several years, yet it is our intention after July 1st to offer uncolored butterine through our various agencies. Retail dealers handling the uncolored goods will be furnished with coloring in capsules. This coloring to be delivered to the purchaser with each package, and the butterine can be colored at home. Of course, we understand that the bill prohibits hotels, restaurants, and boarding houses from buying uncolored and coloring it. Therefore the above will apply to family trade only. It is our desire to comply with all the regulations of the Iowa law applicable to uncolored; hence, we take this opportunity of advising you of our intention. Yours very truly,

ARMOUR PACKING CO.

The proposed plan of the Armour Packing Company was not found by them or other oleomargarine dealers to be practicable, and no extended effort has been made to sell oleomargarine to be accompanied by a capsule of coloring matter. Attention is called to the fact that the new oleomargarine law contains the following provisions: "Any persons that sells, vends, or furnishes oleomargarine for the use and consumption of others, who shall add to or mix with such oleomargarine any artificial coloration that causes it to look like butter of any shade of yellow, shall be held to be a manufacturer of oleomargarine within the meaning of this act, and subject to the provisions thereof, *except when he furnishes it for the use of his own family table without compensation.*" So that it is illegal for a boarding

house keeper to obtain uncolored oleomargarine and then color it before serving it to his guests. The state law also prohibits the coloring of oleomargarine brought into the state. Under date of July 21st, Swift & Co., of Kansas City, sent to this office the following letter:

KANSAS CITY, KAN., July 21, 1902.

Mr. H. R. Wright, Dairy Commissioner, Des Moines, Iowa.

BUTTERINE SAMPLES.

DEAR SIR:—We wrote you under date of July 9th, advising that we were shipping you by express some butterine samples.

Same went forward by the United States Express July 10th.

We have not as yet heard from you in answer to our letter of the above date, and would thank you to give us an early reply thereto, advising whether or not the samples of Butterine submitted you comply with your interpretation of the Iowa Butterine Law.

Yours respectfully,

SWIFT AND COMPANY.

To which the following answer was made:

DES MOINES, IOWA, July 22, 1902.

Swift and Company, Kansas City, Mo.

GENTLEMEN:—Your letter of the 21st inst. is at hand.

I am sending you herewith a copy of our law and call your attention to the latter part of section 2517, with which you are probably already familiar.

I also call your attention to the phrase "*not having a yellow color*" found in the first part of the same section. There has never been a judicial determination of the exact meaning and force of that phrase in any Iowa court with which I am familiar, and lacking such determination, I must decline to affirm that the sample sent us does not have a yellow color, or that its sale would be in accordance with the statute of this state. I think I might as well state here that it is the desire and purpose of this office to prevent the sale of oleo of any shade of yellow and it is the intention of this office to begin cases against any sellers of a product such as you send in.

Respectfully,

H. R. WRIGHT,

Dairy Commissioner.

Since the passage of the new law, the manufacturers have been making every effort to discover some ingredient which might be used in the manufacture of their product and which would give it a shade of yellow. They have succeeded by using more cotton seed oil than before, and by using oleo oil with its natural color, in producing an article which has a very slight shade of yellow. Then by wrapping the same in a parchment paper having a still deeper shade of yellow than the oleo-margarine, they succeed in making the products in the package

appear of a considerable shade of yellow. The Iowa law, however, reads as follows: "A substitute for butter and cheese, *not having a yellow color*, nor colored in imitation of butter and cheese, may be manufactured, sold, etc." The dairy commissioner is, therefore, of the opinion that the sale of oleomargarine having even a slight shade of yellow is illegal under the new law, and he expects to begin prosecutions against dealers selling any oleomargarine in this state if the oleomargarine sold by them has any shade of yellow whatever, or if the other provisions of the law are not strictly complied with.

The new oleomargarine law has very greatly decreased the sale of oleomargarine, for the reason that yellow oleomargarine was so universally sold to its ultimate consumer as and for butter. The persistent efforts of oleomargarine manufacturers to find some oil which may be used as an ingredient of oleomargarine and which will give to it a yellow color, is indicative of the fact that only by making their product in a yellow color can they expect to continue the business. They are discovering that colorless oleomargarine is not saleable to any large extent. Their efforts in the future, no doubt, will take two directions, both for the same end. One line of effort will be to discover a means of making oleomargarine that is yellow without adding to it any "artificial coloration;" and the other line of effort will be toward repealing or emasculating by amendments the present law. There is considerable danger that they may succeed in repealing some of the more stringent provisions of the law. At any rate, they may be expected to make desperate efforts to this end, for the reason that their capital invested will be largely lost to them if the oleomargarine law shall be made effective, and also for the reason that their former extremely profitable business is now impossible for them. The number of oleomargarine manufacturers in the United States is small, their capital invested is very large, their profits heretofore have been enormous, the fortunes of the members of the various firms are very great, and there is not the slightest doubt that they will spend almost any sum of money necessary in their efforts to repeal the present law. They are banded together by their common interest, and their great wealth makes it certain that it will be no easy matter for the farmers and dairymen to retain on the statute books the present law, and certainly it will be a difficult matter to strengthen the law by future enactments of congress.

The National Dairy Union, which has led in the recent fight for national oleomargarine legislation, is expecting to continue the fight against the efforts of the oleomargarine people, and also for the purpose of strengthening the present law if possible. The officers of the union will be powerless unless they have the active and financial support of the creamery and dairy interests of the country, for little or nothing can be done in the way of presenting the case to members of committees of congress unless funds for legitimate and necessary expenses shall be provided by the persons interested in the legislation and who will be most benefited by it. Agricultural people are in a very great majority in the United States, and yet, by reason of their lack of organization, have too little influence in legislative matters. The National Dairy Union represents the organization of the creamery and dairymen of the country, and amounts to nothing at all except as it is supported in every desirable way by the dairy interests throughout the United States. The men who are the officers and active agents of the union are men of the highest character, who have no selfish ends to serve and who have already devoted, without compensation, their time and services to the cause of the dairymen. They are ready and willing to still further devote their time and energies in the cause of the dairyman, and are worthy of the support that they will ask.

Iowa produces 25 per cent of the creamery butter of the United States, and more than 10 per cent of all butter manufactured by any means in this country. It is therefore evident that any benefits derived from anti-oleomargarine legislation will accrue very largely to the dairymen of this state, and for that reason, we are the more interested in the passage of the recent law and in the proposed passage of amendments to it, making it so strong that the fraudulent sale of oleomargarine for butter shall be nearly or quite impossible, and for the same reason the creamerymen and dairymen of this state will be willing to assist in any necessary way the plans of the National Dairy Union in preventing the repeal of present oleomargarine laws and in securing amendments to make stronger the present statutes.

ADULTERATED AND RENOVATED BUTTER.

LIST OF RENOVATED BUTTER FACTORIES.

COUNTY.	LOCATION.	FIRM NAME.	POSTOFFICE ADDRESS.
1 Calhoun.....	Rockwell City.....	Andrew Wood Co.	Rockwell City
2 Clayton.....	McGregor.....	The J. D. Bicknell Produce Co.	McGregor
3 Dallas.....	Redfield.....	Smith Produce Co.	Redfield
4 Des Moines.....	Burlington.....	Iowa Grain & Produce Co. ..	Burlington
5 Dickinson.....	Spirit Lake.....	Stevens Cold Storage Co. . .	Spirit Lake
6 Johnson.....	Oxford.....	H. C. Brown.....	Oxford
7 Lee.....	Keokuk.....	Iowa Pure Butter Co.....	Keokuk
8 Polk.....	Des Moines.....	E. M. Ellingson Co.....	Des Moines
9 Polk.....	Des Moines.....	Schermerhorn-Shotwell Co. .	Des Moines
10 Polk.....	Des Moines.....	MacRae Bros.....	Des Moines
11 Wayne.....	Humeston.....	Jas. L. Humphrey, Jr.....	Humeston
12 Washington.....	Washington.....	Emery & Son.....	Washington
13 Woodbury.....	Sioux City.....	E. J. Hathaway & Co.....	Sioux City

The foregoing list comprises all the process or renovated butter factories in this state which had been licensed up to November first under the new United States law. Of these, nine were in operation during the year ending May 1st, 1902. A considerable number of small plants which were in operation before the law went into effect are now closed, so far as renovated butter is concerned; and several of the plants that were ostensibly operated as creameries have been obliged to go out of the creamery business. Statistics furnished by the nine plants in operation last year, and also in operation at present, show the following totals:

Pounds of renovated butter made	4,530,398
Sold for consumption in Iowa.....	991,333
Shipped outside the state	3,539,055
Pounds of stock purchased in Iowa.....	1,469,281
Pounds of stock purchased elsewhere.....	3,061,107

The 3,539,055 pounds of renovated butter that was shipped out of the state went to the following markets:

New York.....	1,715,759
Boston.....	700,668
New Bedford, Mass.....	514,807
The west.....	200,500
Chicago.....	171,572
Baltimore.....	120,000
Washington, D. C.....	95,000
Buffalo.....	90,000
Ohio.....	29,749
Total.....	3,539,055

Almost one million pounds of process butter was sold in Iowa during the year ending May 1st, 1902. Nearly or quite all, of it has been sold in the larger cities, especially Des Moines, and is uniformly sold in pound bricks, and has usually been sold as creamery butter; sometimes as "gathered cream butter;" but since July first these bricks of renovated butter have been branded in accordance with the new law, both on the butter itself and on the parchment paper containing it, with the words **RENOVATED BUTTER.**

The new oleomargarine law, so called is an amendment of the original act of August 2nd, 1886, an act which defined butter and oleomargarine and imposed a tax of two cents per pound on oleomargarine and required certain license fees from manufacturers, wholesalers and retailers of oleomargarine. The new act amended these provisions, and also made new provisions governing the manufacture and sale of adulterated butter and renovated butter; so that the law contains definitions of oleomargarine and of three kinds of dairy products, butter, adulterated butter and renovated butter. Butter is defined as follows: "For the purpose of this act, the word 'butter' shall be understood to mean the food product usually known as butter, and which is made exclusively from milk or cream, or both, with or without common salt, and with or without additional coloring matter."

Adulterated butter is defined as follows: " 'Adulterated' butter is hereby defined to mean a grade of butter produced by mixing, reworking, rechurning in milk or cream, refining, or in any way producing a uniform, purified or improved product from different lots or parcels of melted or unmelted butter or butter fat, in which any acid, alkali, chemical, or any substance whatever is introduced or used for the purpose or with the effect of deodorizing or removing therefrom rancidity; or any butter or butter fat with which there is mixed any substance foreign to butter as herein defined, with intent or effect of cheapening in cost the product; or any butter in the manufacture or manipulation of which any process or material is used with intent or effect of causing the absorption of abnormal quantities of water, milk, or cream."

Renovated butter is defined as follows: " 'Process butter' or 'Renovated butter' is hereby defined to mean butter which has been subjected to any process by which it is melted, clarified

or refined and made to resemble genuine butter, always excepting 'adulterated butter' as defined by this act."

From these definitions, it will be seen that any butter which does not contain fat other than butter fat must come under one of these three heads. Attention is called to the fact that the definitions are entirely separate and distinct, and that the provisions in one of them do not necessarily apply to either of the others. Also that adulterated butter is, in general, butter in which "an acid, alkali, chemical or any substance whatever is used for the purpose, or with the effect of deodorizing or removing therefrom rancidity." It is also butter, "in the manufacture or manipulation of which any process or material is used with intent or effect of causing the absorption of abnormal quantities of water, milk or cream." This last provision applies to manipulated or reworked butter only and not to butter "made exclusively from milk or cream," without the use of chemicals and which may possibly contain a slight excess over the standard amount of water as established by the internal revenue department in defining the expression "abnormal quantities of water." The department regulation is as follows: "*Renovated* butter having 16 per cent or more of moisture will be held to contain abnormal quantities of water, milk or cream, and be therefore classed as 'adulterated butter.'" Hence, no butter maker who is not using chemicals to make his butter contain an excess of moisture need fear that he will be classed as a maker of adulterated butter, even if his product has more than 16 per cent of moisture, since the law will not apply to him, notwithstanding the reports to the contrary which at one time appeared in the dairy press. Neither will the butter maker who uses a preservative other than salt in his butter be classed as the maker of adulterated butter because of any reference to "chemicals" in the definition of adulterated butter, and the internal revenue department has so held. These provisions of the law are so stringent and the tax of ten cents per pound upon adulterated butter so great that no licenses for the making of adulterated butter, or for the sale of it, have been issued, and therefore, none is being made at present in accordance with the law. It will, no doubt, be the case that future amendments to this will establish a standard for water in *pure* butter, and in case this is done the standard of 16 per cent will no doubt be adopted.

The rules and regulations in regard to renovated butter formulated by the secretary of the treasury and the secretary of

agriculture in accordance with the provisions of the law practically restrict the definition of renovated butter to that product made by the usual process of melting, deodorizing by agitation and by blowing air through the melted oil, and rechurning, with the usual additions of salt and coloring matter. The manufacturer of renovated butter must pay a license fee of \$50.00 per annum; must attach to each package tax-paid stamps to the amount of a quarter of a cent a pound on the product made. He must display on the side or end of the building in which the business is carried on a conspicuous sign, giving his name, followed by the words "Manufacturer of renovated butter. Factory No. —." He must also stamp upon each print, brick, or roll, or on top of the solid body of butter, if it be packed in a tub or firkin the words "Renovated butter." In case he puts up his butter in bricks or rolls of not less than one pound, the successive papers or wrappers in which the print or roll is contained must also bear the words "Renovated butter." The outside of the original package, whether it be a tub containing a solid mass of butter, or a box of any kind containing a number of bricks or rolls, must also bear the words "Renovated butter." The manufacturer may also use a brand, giving his own name and words or marks descriptive of the quality of his product, provided the brands do not cover up the stamps or the other marks required by the law. From these provisions, it will be seen that, except in the case of butter packed in solid mass to be divided when retailed, the butter and all of its containers, or any of them, will always show the words "Renovated butter," unless the retailer removes the print or roll from its original package, erases the words "Renovated butter" pressed upon the butter itself, and re-wraps it. If he does this, he runs counter to the general provisions of internal revenue laws and the special rule of the secretaries of the treasury and agriculture, which provides that the butter must be retained in its "original package bearing the tax stamp and other prescribed marks until it is delivered to the consumer or purchaser in retail trade." The renovated butter, which may be packed in solid mass, must also be kept in its original package; but in this form might be easily sold to the purchaser for creamery butter. But when renovated butter is sold in bricks and in accordance with all the provisions of the law, the purchaser will invariably be informed as to the product he is buying. The difference in price between renovated butter and creamery butter is so small that scarcely

any retailer would take the risk of violating the internal revenue law for the sake of the small additional profit he might make by so doing. The creamery man and the maker of dairy butter as well will find it to his interest to encourage the retail sale of butter in bricks and prints, instead of in other forms, so that the purchaser may know at any rate that they are not receiving renovated butter and paying for creamery butter.

Before this new law went into effect no retailer of butter in Iowa ever sold any renovated butter. He invariably sold creamery butter or dairy bricks, or butter with some other euphonious title. Even now some retailers attempt to sell renovated butter for creamery butter. These evident intentions to defraud by selling renovated butter in place of a better product, and at the price of a better product, can not always be excused on the theory of the ignorance of the retailer. Formerly he may himself have been deceived by the manufacturer who perhaps was running a creamery; but under the present United States law, he knows invariably what he is buying, and hence, has no possible excuse for attempted deception of his patrons. The new law has depressed the retail price of renovated butter in the city of Des Moines about four cents per pound, and probably has depressed the wholesale price to an equal extent, and naturally these decreases in price are visited upon the original makers of the butter from which the renovated butter has been made. It should be noted, however, that this difference in price of packing stock has been caused by the fact that this renovated butter must now be retailed for what it is and must sell on its own merits, and not on the merit of a better product, namely, creamery butter; so that, it is now selling for exactly what it is worth in comparison with creamery butter, whereas, under former conditions, it was fraudulently sold as creamery butter and for a creamery butter price. At any rate, these losses to the makers of this packing stock effects Iowa farmers to a very small degree, for the reason that only one and a half million pounds of the renovated butter made in Iowa originated in this state. Nearly 70 per cent of the renovated butter stock was purchased outside of Iowa. Practically, the farmer who makes the butter which eventually goes into the renovating factory loses the amount of the tax upon it, which is a quarter of a cent a pound, and any other difference in price of packing stock caused by the new law is accounted for by the fact that it eliminates the illegitimate profits that were obtained by selling the renovated butter for

creamery butter; and this small loss may be easily changed into a considerable profit if, instead of making a cheap grade of butter, which must be renovated in order to be palatable, the farmers will patronize the creamery that is able to make the best and highest priced kind of butter.

NATIONAL DAIRY STATISTICS.

The following statistics are just now available from the United States census of 1900. The second column of the first table gives the total value of dairy products, and the third column approximately the total number of gallons of milk produced, while the fourth and fifth columns give only the pounds of butter and cheese made on the farms, and do not include the pounds of butter and cheese made in creameries or factories. For the year ending May 1st, 1900, the state of Iowa made 84,965,062 pounds of creamery butter, which is almost exactly twenty per cent. of the creamery butter reported as made in the United States for that year. This is in addition to the 61,789,288 pounds of farm made butter reported in the first of these tables. No other state approaches this total of butter made, and only the state of New York exceeds Iowa in the number of cows; Illinois, with 416,000 cows less than Iowa, being third on the list. It will also be noticed that relatively small amounts of butter and cheese are exported. It is only when butter is very low in price at home that it can be exported at a profit.

From the following table it will be seen that the income from each cow in the United States is about \$27.00. From New York, the value of each cow's product is \$36.94; Pennsylvania, \$38.03; Ohio, \$31.02; Illinois, \$29.41; Wisconsin, \$26.82; Iowa, \$19.32.

The states of Pennsylvania, Ohio and New York have large demands for the product of the cow in the form of milk; hence, their high averages. The conditions in Iowa, Illinois and Wisconsin are different from those in the eastern states and each differs from the other. In Iowa, particularly, a very large number of cows have been classed as dairy cows which are exclusively a part of the beef industry of the state. It is nevertheless true that the income per cow in Iowa is very much less than it should be.

DAIRY COWS, JUNE 1, 1900 AND DAIRY PRODUCTS OF 1899 ON FARMS AND RANGES, BY STATES AND TERRITORIES.

STATES AND TERRITORIES.	Number of dairy cows.	Value of dairy products.	Gallons of milk.	Pounds of butter made outside of creameries.	Pounds of cheese made on farms.
The United States	17, 139, 674	\$472, 369, 255	7, 266, 392, 674	1, 071, 745, 127	16, 372, 330
Alabama	279, 263	6, 610, 967	95, 882, 108	19, 121, 964	96, 874
Alaska	13	596	4, 250	200	12
Arizona	17, 965	540, 700	3, 056, 109	379, 311	31, 335
Arkansas	312, 577	6, 912, 459	109, 861, 393	21, 585, 258	18, 335
California	307, 245	12, 124, 471	153, 644, 741	20, 853, 390	4, 249, 598
Colorado	100, 116	3, 778, 901	38, 440, 111	4, 932, 482	100, 134
Connecticut	136, 434	7, 060, 188	68, 951, 862	4, 541, 78	40, 628
Delaware	32, 591	1, 062, 807	12, 681, 268	1, 629, 949	194
District of Columbia	1, 251	186, 066	850, 349	3, 478	.....
Florida	78, 830	1, 408, 003	9, 640, 434	1, 386, 445	3, 731
Georgia	276, 024	5, 954, 575	82, 438, 532	15, 111, 494	2, 296
Hawaii	4, 023	91, 876	584, 120	118, 871	12
Idaho	51, 929	1, 243, 197	15, 122, 548	2, 520, 316	196, 662
Illinois	1, 007, 664	29, 638, 619	457, 106, 965	52, 463, 450	323, 66
Indiana	574, 276	15, 739, 594	263, 457, 239	51, 042, 336	178, 739
Indian Territory	110, 687	1, 504, 747	26, 466, 555	5, 105, 715	1, 227
Iowa	1, 423, 648	27, 516, 870	535, 872, 240	61, 739, 288	306, 428
Kansas	676, 456	11, 732, 902	244, 909, 123	41, 640, 772	291, 46
Kentucky	964, 025	9, 985, 540	159, 311, 527	30, 446, 381	45, 739
Louisiana	184, 815	4, 108, 015	39, 251, 413	4, 918, 229	133, 194
Maine	173, 592	8, 182, 344	99, 586, 183	16, 174, 173	425, 102
Maryland	147, 284	5, 228, 698	64, 040, 517	9, 066, 662	338, 435
Massachusetts	184, 592	12, 885, 744	105, 571, 873	4, 980, 292	19, 629
Michigan	563, 905	16, 903, 087	369, 617, 046	60, 051, 968	331, 176
Minnesota	753, 632	16, 623, 460	304, 017, 106	41, 188, 846	290, 627
Mississippi	299, 318	6, 064, 513	97, 080, 385	18, 881, 236	28, 572
Missouri	765, 386	15, 042, 390	258, 207, 755	45, 509, 110	323, 469
Montana	45, 036	1, 669, 978	15, 696, 214	2, 454, 072	30, 324
Nebraska	512, 544	8, 545, 408	190, 477, 911	34, 518, 759	294, 439
Nevada	13, 646	433, 361	4, 446, 071	509, 523	94, 082
New Hampshire	115, 099	5, 591, 272	60, 724, 590	6, 385, 611	104, 339
New Jersey	157, 407	8, 439, 899	77, 714, 055	5, 894, 393	24, 577
New Mexico	16, 775	469, 423	3, 069, 657	313, 003	68, 571
New York	1, 501, 608	55, 474, 155	772, 799, 352	74, 714, 376	2, 624, 532
North Carolina	233, 178	6, 175, 397	89, 525, 749	16, 913, 802	28, 863
North Dakota	125, 503	2, 853, 131	48, 845, 280	9, 178, 815	70, 861
Ohio	818, 239	25, 383, 627	425, 870, 394	79, 551, 299	1, 167, 001
Oklahoma	165, 862	2, 491, 673	47, 439, 853	8, 761, 359	45, 294
Oregon	122, 447	3, 550, 963	48, 582, 968	8, 107, 460	467, 256
Pennsylvania	943, 773	35, 800, 110	487, 033, 818	74, 221, 685	857, 167
Rhode Island	23, 660	1, 023, 707	12, 923, 512	488, 080	6, 751
South Carolina	126, 684	3, 232, 725	44, 031, 528	8, 150, 437	1, 081
South Dakota	270, 634	4, 351, 588	99, 244, 975	17, 400, 970	136, 863
Tennessee	321, 676	8, 028, 466	147, 336, 961	29, 061, 696	26, 622
Texas	861, 023	15, 510, 978	251, 342, 638	47, 991, 492	136, 183
Utah	65, 905	1, 522, 132	25, 124, 642	2, 812, 122	169, 251
Vermont	270, 194	9, 321, 389	142, 042, 223	18, 894, 700	406, 669
Virginia	281, 876	6, 969, 964	105, 068, 428	19, 905, 830	31, 077
Washington	107, 232	3, 816, 691	50, 182, 415	7, 372, 106	151, 069
West Virginia	205, 601	5, 088, 153	83, 861, 660	16, 913, 129	74, 243
Wisconsin	998, 397	56, 779, 721	472, 274, 264	44, 739, 147	1, 635, 618
Wyoming	14, 272	421, 613	5, 121, 074	888, 554	24, 327

DAIRY STATISTICS OF THE UNITED STATES,

[From preliminary reports of the Twelfth Census, for the year 1900; substantially complete, but subject to some revision.]

Numbers and products of dairy farms.

Farms—		
Total in the country	number..	5,739,657
Reported as dairy farms <i>a</i>	do ..	357,578
Reporting dairy cows	do ..	4,514,210
Cows—		
Kept for milk on farms	do ..	17,139,674
Kept not on farms, or "town cows"	do ..	973,033
Total dairy cows	do ..	18,112,707
Milk—		
Produced on farms	gallons..	7,266,392,674
From cows not on farms <i>b</i>	do ..	462,190,676
Total produced..	do ..	7,728,583,350
Butter—		
Made on farms	pounds..	1,071,745,127
Made in creameries, etc	do ..	420,954,016
Total produced	do ..	1,492,699,143
Cheese—		
Made on farms	do ..	16,372,330
Made in factories	do ..	282,332,774
Total produced	do ..	298,905,404
Condensed milk—		
Total produced	do ..	186,921,787
Total value of dairy products in 1900 <i>b</i>		\$600,000,000

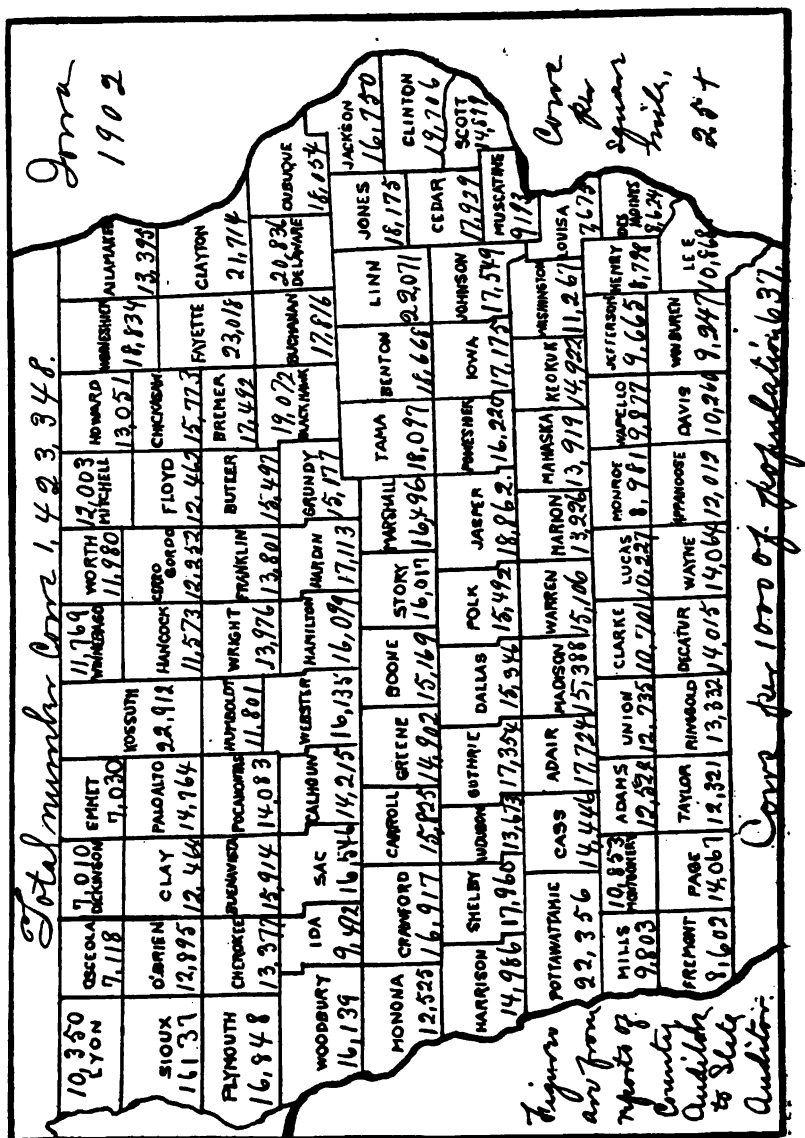
Exports of dairy products from the United States in the calendar year 1899, 1900, and 1901.

YEAR.	BUTTER.		CHEESE.		CONDENSED MILK.
	Pounds.	Dollars.	Pounds.	Dollars	Dollars.
1899.....	27,308,869	4,502,744	34,686,833	3,376,108	1,188,057
1900.....	13,283,557	2,396,062	54,059,049	5,549,254	1,288,127
1901.....	24,249,565	4,184,966	31,396,115	3,006,344	1,646,579

Butter and cheese for 1901, by countries.

EXPORTED TO—	BUTTER.		CHEESE.	
	Pounds.	Dollars.	Pounds.	Dollars.
United Kingdom	17,146,985	8,043,885	29,179,886	2,740,947
Germany	532,714	86,462	5,296	540
Other Europe	622,626	87,626	.....	.....
British North America	906,476	178,845	859,996	86,019
Mexico	378,351	71,942	802,228	86,714
Central American States and Brit. Honduras	231,741	44,496	190,867	23,779
West Indies and Bermuda	1,850,069	811,410	842,696	107,648
Brazil	1,490,009	188,496	5,141	691
Other South America	806,626	124,715	107,891	13,624
Asia and Oceania	220,886	43,748	897,189	46,980
All other countries	34,066	6,846	15,016	1,792
Total calendar year 1901.	24,249,565	4,184,966	81,896,115	8,006,844

a Farms deriving at least 40 per cent of total income from dairy. *b* Estimated.



AUDITOR'S REPORT ON NUMBER OF COWS.

The table given herewith shows the number of cows reported for the purposes of taxation by the county auditors to the state auditor, and of course, originate with the various assessors of the state. The figures for 1895 are from the state census of that year and were obtained in a different manner from those of the years 1900, 1901, 1902. From the figures given it will be seen that there has been a steady increase in the number of cows reported in almost, if not quite, every county of the state. In this classification is included all cows not embraced in the classification "heifers one year old" and "heifers two years old." Less than half the total number of cows here reported are tributary to the creameries and cheese factories of this state, which indicates the possibility of increase in the total butter production of the state by reason of increase of cows tributary to the creameries.

The values of cows as given by the assessors and auditors varies a great deal and naturally these average values are considerably below the actual selling value of good milk cows, for the reason that the classification embraces a very large number of cows that could not be sold as milk cows.

The assessors' reports make the following classification and returns:

Heifers one year, 545,808; average value, \$14.57; total value, \$7,954,382.

Heifers two years old, 352,456; average value, \$19.87; total value, \$7,004,020.

Cows, 1,423,348; average value, \$24.26; total value, \$34,540,890.

The average value as given is supposed to be the actual value, and the figures given by the assessors range from \$20.02 in Palo Alto county to \$34.08 in Muscatine county.

TABLE SHOWING NUMBER OF COWS FOR EACH COUNTY AND FOR THE STATE FOR THE YEARS 1895, 1900, 1901 1902 AND VALUES FOR 1902.

Figures are from census of 1895 and the reports of county auditors to the state auditor for the years 1900, 1901, and 1902.

COUNTIES.	VALUE.	1902.	1901.	1900.	1895.
The State.....	\$ 84,540,800	1,423,348	1,362,242	1,295,900	1,087,250
Adair	425,046	17,724	16,198	14,050	9,695
Adams	801,053	12,524	11,897	10,792	7,699
Allamakee	808,574	18,396	18,550	12,677	12,239
Appanoos	237,596	12,012	11,910	10,928	8,142
Audubon.....	804,808	18,678	12,980	11,681	8,276
Benton.....	458,520	18,678	18,658	17,407	14,506
Black Hawk.....	457,120	19,072	18,647	17,807	17,965
Boone	865,814	15,169	14,543	13,681	11,121
Bremer	423,802	17,422	17,989	17,671	18,001
Buchanan	408,743	17,816	17,605	17,254	18,790
Buena Vista.....	326,620	15,914	15,046	14,094	9,924
Butler	864,668	15,497	16,187	15,954	15,454
Calhoun	897,808	14,215	13,544	12,330	9,859
Carroll.....	855,125	15,525	16,172	14,467	10,823
Cass	408,593	14,446	13,372	12,299	9,513
Cedar	429,096	17,929	17,807	16,475	12,710
Cerro Gordo.....	260,933	12,252	12,809	11,796	10,089
Cherokee	327,204	13,377	12,999	11,743	8,822
Chickasaw	377,203	15,773	15,532	15,807	16,066
Clarke	271,180	10,701	10,298	9,397	6,987
Clay	276,696	12,464	12,732	11,699	8,394
Clayton	517,968	21,714	21,068	20,850	21,732
Clinton	462,780	19,706	19,553	19,167	21,273
Crawford.....	419,435	16,917	16,197	14,967	11,401
Dallas	366,967	15,346	14,169	13,703	10,512
Davis	247,121	10,390	10,232	9,877	7,242
Decatur	550,576	14,015	17,331	12,040	8,196
Delaware	434,764	20,596	21,193	20,801	20,777
Des Moines	222,656	8,231	8,501	7,793	7,525
Dickinson	171,418	7,010	6,842	6,183	4,018
Dubuque	424,495	18,054	19,095	17,844	19,373
Emmet	132,610	7,090	6,712	5,864	3,894
Fayette	532,938	23,018	22,375	22,232	23,734
Floyd	500,570	12,462	12,604	12,920	12,554
Franklin	523,217	13,801	13,056	12,117	11,330
Fremont	237,039	8,802	8,214	7,497	5,348
Greene.....	355,536	14,902	13,373	12,955	10,399
Grundy	374,110	15,177	15,214	14,773	13,606
Guthrie	423,643	17,354	15,961	14,525	8,334
Hamilton	387,732	16,099	15,535	14,441	12,769
Hancock	275,524	11,573	11,160	10,008	7,475
Hardin	396,731	17,113	15,325	14,669	11,959
Harrison	351,541	14,986	14,214	12,661	9,298
Henry	210,343	8,798	8,909	8,621	7,074
Howard	301,543	13,051	13,081	11,696	11,010
Humboldt	237,247	11,301	11,206	10,363	8,546
Ida	223,520	9,472	9,303	8,165	5,950
Iowa	405,369	17,175	17,332	15,457	12,270
Jackson.....	407,175	16,730	16,270	15,597	15,149
Jasper	536,137	13,563	17,974	16,301	13,370

TABLE SHOWING NUMBER OF COWS, ETC.—CONTINUED.

COUNTIES.	VALUE.	1908.	1901.	1900.	1898.
Jefferson	229,166	9,895	9,806	8,828	7,495
Johnson	489,800	17,549	17,597	17,420	12,655
Jones	589,072	18,176	18,045	18,454	13,947
Keokuk	379,468	14,922	14,208	13,840	10,126
Kossuth	461,019	22,912	21,467	19,846	14,120
Lee	276,761	10,868	10,626	10,870	8,914
Linn	542,081	22,071	20,653	20,646	24,365
Louis	193,064	7,676	7,253	6,701	5,538
Lucas	246,812	10,227	9,887	9,228	7,217
Lyon	226,609	10,860	9,231	8,229	5,301
Madison	373,056	15,388	14,095	13,300	9,436
Mahaska	546,098	18,919	18,725	12,840	10,328
Marion	365,709	13,226	12,667	11,225	9,634
Marshall	403,917	16,466	15,557	14,167	12,361
Mills	269,896	9,806	9,069	8,598	5,522
Mitchell	297,224	12,008	11,744	11,199	10,065
Monona	300,116	12,525	11,573	11,757	9,738
Monroe	232,076	8,941	9,152	8,221	6,538
Montgomery	264,882	10,853	10,402	9,407	8,970
Muscatine	313,815	9,193	11,040	10,104	9,233
O'Brien	315,975	12,815	12,356	11,023	10,179
Owasa	173,822	7,118	6,485	5,881	3,688
Pae	388,025	14,017	12,375	12,756	8,084
Palo Alto	215,615	14,764	14,969	14,805	10,290
Plymouth	421,940	16,848	16,299	14,598	10,811
Pocahontas	346,205	14,083	14,191	12,790	9,354
Polk	435,841	15,492	14,815	13,616	11,378
Pottawattamie	536,544	22,856	21,373	18,396	14,437
Poweshiek	343,627	16,220	15,327	14,736	12,190
Ringgold	390,736	13,832	12,723	12,311	8,514
Sac	397,730	16,546	15,472	14,158	11,344
Scott	409,595	14,899	14,995	14,204	12,779
Shelby	431,904	17,960	17,117	15,195	9,322
Sioux	400,191	16,137	14,888	13,409	9,016
Story	380,960	16,017	15,112	14,394	12,216
Tama	471,429	18,097	17,974	17,028	13,753
Taylor	305,026	12,321	13,453	11,833	8,694
Union	242,648	12,735	11,590	11,344	7,510
Van Buren	200,962	9,247	9,069	8,673	7,132
Wapello	225,292	9,877	9,608	8,926	7,685
Warren	394,478	15,106	14,084	13,022	9,417
Washington	289,390	11,297	12,972	12,620	9,066
Wayne	309,964	14,064	14,459	13,178	8,543
Webster	452,948	16,185	15,433	14,928	13,462
Winnebago	236,324	11,769	10,480	9,893	7,100
Winnechick	452,392	18,884	19,083	17,809	13,410
Woodbury	381,774	16,189	16,103	13,885	10,295
Worth	270,147	11,960	11,630	11,896	9,733
Wright	281,029	13,796	13,749	12,191	10,108
The state	\$ 84,540,890	1,423,848	1,382,242	1,295,900	1,087,229

TABLE SHOWING NUMBER OF POUNDS OF MILK RECEIVED, NUMBER POUNDS OF CREAM RECEIVED, POUNDS OF BUTTER MADE, POUNDS SOLD TO PATRONS IN IOWA AND SHIPPED OUTSIDE THE STATE SO FAR AS REPORTED BY THE CREAMERIES.

COUNTY.	No. reporting.	Pounds of milk received.	Pounds of cream received.	POUNDS OF BUTTER MADE AND MARKETS FOR SAME.				
				No. reporting.	Pounds of butter made.	Pounds sold to patrons.	Pounds sold in Iowa.	Pounds shipped out of the state.
The state	642	21,246,198,000	44,695,178	640	66,657,626	4,027,066	5,791,006	56,841,575
Adair	9	23,808,000	136,866	9	1,203,536	48,944	8,578	964,658
Adams	2	10,955,000	.....	2	490,987	8,568	17,239	461,987
Allamakee	6	12,920,000	1,823,490	6	1,230,541	61,918	21,926	1,155,702
Appanoose .....	.....	.....	.....	.....	.....	.....	.....	.....
Audubon	10	27,665,000	.....	10	1,165,872	100,023	6,590	1,059,269
Benton	5	5,61,000	.....	5	255,696	11,100	257,958	153,077
Black Hawk	15	90,995,000	1,297,080	15	1,699,046	136,415	357,740	1,197,616
Boone	8	5,935,000	1,600	8	260,807	18,766	1,600	245,411
Bremer	21	64,611,000	.....	21	2,885,299	213,089	50,913	2,621,207
Buchanan	11	44,85,000	508,019	11	2,104,821	170,476	38,650	1,895,689
Buena Vista	5	10,935,000	411,717	5	572,738	35,667	3,442	538,224
Butler	16	83,538,000	404,072	16	1,833,033	176,182	142,153	1,452,459
Calhoun	7	9,814,000	76,987	7	464,636	18,174	11,077	439,055
Carroll	11	18,404,000	.....	11	1,56,511	98,698	725	717,068
Cass	1	8,745,000	.....	1	885,221	1,407	24,206	360,955
Cedar	5	3,990,000	784,120	5	826,400	7,500	124,990	198,520
Cerro Gordo	5	1,56,000	122,423	4	152,231	8,547	96,559	112,125
Charoake	6	4,91,000	.....	6	212,614	8,180	14,861	189,573
Chickasaw	16	39,043,000	1,894,196	16	2,421,416	178,875	6,904	2,196,637
Clarke	1	1,522,000	.....	1	67,939	2,182	.....	65,807
Clay	8	14,946,000	.....	8	474,146	88,599	2,728	372,864
Clayton	18	81,477,000	1,846,196	18	2,835,523	123,416	84,555	2,227,577
Clinton	10	13,930,000	.....	10	565,038	26,896	102,647	453,010
Crawford	8	897,000	1,120,000	8	1,856,480	23,700	500	363,230
Dallas	4	9,968,000	.....	4	359,996	18,696	44,038	297,244
Davis	1	998,000	.....	1	89,115	235	3,250	85,640
Decatur .....	.....	.....	.....	.....	.....	.....	.....	.....
Delaware	10	50,873,000	.....	20	2,151,65	194,807	85,125	1,871,718
Des Moines .....	.....	.....	.....	.....	.....	.....	.....	.....
Dickinson	8	3,916,000	95,817	8	875,268	24,899	17,608	352,326
Dubuque	18	27,921,000	.....	18	1,197,574	99,82	130,214	968,066
Emmet	11	11,137,000	400,558	11	73,270	54,734	56,750	881,785
Fayette	20	67,041,000	18,73	20	2,830,531	515,597	170,488	2,302,496
Floyd	3	.....	1,688,440	3	643,236	23,730	544,566	180,000
Franklin	8	18,082,000	544,630	8	359,906	29,662	11,000	318,243
Fremont .....	.....	.....	.....	.....	.....	.....	.....	.....
Greene	2	1,208,000	.....	2	47,695	897	32,506	9,720
Grundy	13	24,073,000	217,197	13	1,774,561	106,440	53,361	1,614,740
Guthrie	5	1,077,000	8,060	5	625,496	11,237	66,862	547,844
Hamilton	8	18,165,000	44,920	8	777,729	107,966	137,272	582,491
Hancock	7	8,778,000	414,218	7	498,714	15,814	4,112	479,238
Hardin	14	82,567,000	419,878	14	1,242,523	98,000	13,931	1,185,232
Harrison	4	8,786,000	162,237	8	175,981	12,118	53,841	129,977
Henry	8	696,000	.....	8	44,116	1,664	2,672	82,780
Howard	9	11,620,000	2,046,924	9	1,132,266	69,737	13,169	1,060,737

POUNDS OF BUTTER MADE AND MARKET FOR SAME—CONTINUED.

COUNTIES.	No. reporting.	Pounds of milk received.	Pounds of cream received.	POUNDS OF BUTTER MADE AND MARKET FOR SAME.				
				No. reporting.	Pounds of butter made.	Pounds sold to patrons.	Pounds sold in Iowa.	Pounds shipped out of the state.
Humboldt	12	17,478,000	618,827	12	882,971	81,136	17,824	7,840,113
Ida	4	4,057,000	110,880	4	216,874	9,350	4,730	202,774
Iowa	8	9,876,000	860,014	8	886,414	29,815	9,868	840,748
Jackson	18	17,278,000	88,560	18	778,886	26,862	49,739	7,027,489
Jasper	7	6,900,000	77,964	7	812,562	18,058	82,887	261,967
Jefferson	4	2,075,000	96,211	4	108,986	10,801	84,186	59,447
Johnson	1	.....	828,000	1	82,000	212	12,000	69,798
Jones	13	49,071,000	51,457	15	2,425,752	111,909	.....	108,139
Keokuk	6	8,788,000	.....	6	198,886	5,248	85,408	128,846
Kossuth	21	45,696,000	74,848	21	2,582,889	145,808	572,320	1,261,713
Lee .....	.....	.....	.....	.....	.....	.....	.....	.....
Linn	16	22,577,000	.....	16	1,260,867	71,062	164,577	1,014,738
Louisa .....	.....	.....	.....	.....	.....	.....	.....	.....
Lucas	1	428,000	.....	1	17,460	2,061	15,000	10,489
Lyon	2	1,898,000	.....	2	108,796	8,178	5,000	98,613
Madison .....	.....	.....	.....	.....	.....	.....	.....	.....
Mahaska	2	720,000	60,100	2	87,400	2,800	21,800	65,880
Marion	1	.....	236,904	1	58,426	.....	28,324	28,101
Marshall	7	8,198,000	1,695,558	7	582,847	14,918	7,000	548,718
Mills .....	.....	.....	.....	.....	.....	.....	.....	.....
Mitchell	10	8,083,000	6,984,496	10	2,457,818	80,486	41,480	2,868,883
Monona .....	.....	.....	.....	.....	.....	.....	.....	.....
Monroe	1	804,000	.....	1	81,128	2,428	17,488	11,220
Montgomery	1	2,000,000	.....	1	85,000	1,200	12,000	71,800
Muscataine	2	875,000	420,000	2	141,000	2,000	52,880	66,110
O'Brien	4	6,769,000	.....	4	804,828	20,807	10,780	272,989
Osceola	1	430,000	.....	1	19,300	.....	.....	19,300
Page	8	8,827,000	200,000	8	148,167	2,800	40,700	105,167
Palo Alto	18	42,081,000	.....	18	1,798,756	216,129	60,080	1,811,877
Plymouth	7	11,571,000	80,201	7	508,697	88,442	19,448	446,812
Pocahontas	8	9,088,000	266,827	8	468,811	28,112	8,259	427,408
Polk	2	4,888,000	.....	2	208,048	18,651	171,082	20,515
Pottawattamie	5	5,028,000	190,662	5	828,188	7,910	124,739	198,489
Poweshiek	5	7,454,000	.....	5	807,180	2,400	58,646	251,114
Ringgold	1	1,814,000	.....	1	48,878	8,489	.....	46,114
Sac	9	18,508,000	19,062	9	570,870	56,901	15,715	508,054
Scott	8	1,014,000	811,000	8	182,898	1,800	108,588	24,898
Shelby	7	16,898,000	91,708	7	707,917	89,986	91,278	578,799
Sioux	4	2,687,000	818,878	4	270,871	7,784	2,188	270,684
Story	18	27,189,000	17,817	18	1,168,949	112,040	155,112	901,798
Tama	6	6,049,000	.....	6	845,196	16,800	.....	828,808
Taylor	8	1,187,000	600,000	8	274,701	8,590	8,220	290,881
Union	4	18,000,000	.....	4	758,809	19,068	84,914	684,767
Van Buren	2	.....	520,000	2	180,000	.....	.....	180,000
Wapello	1	150,000	.....	1	7,000	.....	.....	7,000
Warren	2	2,558,000	.....	2	111,864	4,087	28,827	84,000
Washington	8	8,647,000	.....	8	290,771	2,612	88,700	174,489
Wayne	1	8,245,000	.....	1	140,540	8,000	.....	187,000
Webster	6	4,242,000	868,807	6	268,168	10,982	18,085	388,113
Winnebago	8	28,865,000	643,867	8	1,160,864	120,410	58,169	1,008,796
Winneblesh	14	7,728,000	5,115,701	14	1,668,247	88,726	27,782	1,748,705
Woodbury	8	115,000	7,467,411	8	1,874,879	8,089	7,080	1,884,801
Worth	10	18,899,000	500,988	10	829,717	64,866	86,144	738,217
Wright	8	4,868,000	1,846,920	8	596,598	27,908	12,080	588,684
The state	642	1,246,198,000	44,086,178	640	66,987,626	4,085,080	5,791,000	68,841,875

COMPARISON BY YEARS.

ENDING MAY 1—	1899.	1900.	1901.	1902.
Average pounds of butter per creamery.	112,980	104,913	105,491	104,152
Total pounds of butter for all creameries	87,972,470	84,965,062	82,704,944	77,895,006

Of the creamery butter made, 14.7 per cent was consumed in Iowa.
Last year's report show 11.7 per cent for this item.

BUTTER PRICES.

The following table showing the average monthly price of butter in the New York market is prepared from the published reports of the official quotations and shows the average price of butter for the year ending November 1, 1902, to have been 24.16 cents. These figures are a trifle misleading for the reason that more butter is made and sold by the creameries when the prices are the lowest, and consequently the average price actually received by any Iowa creamery for its total make of butter for the year will be considerably below the average as here given. However, the figures will do for comparisons, because they have all been obtained by the same method. The uniform high price in the winter months points to the possible profit there is in winter dairying for the man who has farm buildings suitable for this practice.

The New York market is set forth in this report for the reason that it is the market which makes the standard of prices, not only for the east, but for the whole country as well, and only local conditions can cause the prices in other markets to vary greatly from the New York market, less the difference in freight rate. The table of total butter shipments which follows indicates very clearly that a very large proportion of Iowa's butter goes to New York, and that only a small part is marketed in the west. It is easy to believe that the place where large quantities of butter are sold is the market which must fix the price not only of butter sold in that particular market, but the price of butter sold in other markets. A comparison of prices made in the different markets of the country very clearly shows that they have all followed New York.

The prices as given in this table are the official quotations. Nine-tenths of the creameries of the state receive at least "a

half cent above the market." This is only another way of saying that the official markets are fixed at less than the price at which the butter actually sells. That this must be true is shown by the fact that nearly all creameries receive the same price for their butter, regardless of quality, and by the fact that commission men are advertising that they will pay a whole cent above for butter that will score extras. All this leads to the suspicion that possibly the official report is fixed not only a half or a whole cent below the actual selling price of butter, but perhaps two cents, or more, below. Further evidence on this point is not lacking. One of the largest creameries of the state effected a sale of half its product for several weeks at one and one-fourth cents above New York, the butter to be delivered at an Illinois point. The difference in freight makes this sale equivalent to two or two and one-fourth cents above New York. This butter was sold to a commission man, who must have sold it at the same price, or more, in order to have made his commission, so that he found it possible to pay two cents above the New York market, and his competitors and other commission men who made returns of only a half cent above must have made a profit in addition to their commissions of one and a half cents per pound, if they actually sold their butter at the same price received for the shipment mentioned. The larger creameries of the state, to a considerable number, are making an effort to find markets for themselves without the intervention of a commission merchant, and their uniform success in managing their large concerns is, no doubt, in no small degree due to the fact that they are able to make a great saving by selling their own butter, which is a plan that cannot be followed by the smaller creameries, but which commends itself to the management of those creameries which make annually a very large amount of butter.

**SHOWING AVERAGE MONTHLY PRICE OF FANCY WESTERN
CREAMERY BUTTER IN NEW YORK MARKET.**

MONTH.	Twelve months ending Nov. 1, 1898.	Twelve months ending Nov. 1, 1899.	Twelve months ending Nov. 1, 1900.	Twelve months ending Nov. 1, 1901.	Twelve months ending Nov. 1, 1902.
November	\$.2510	\$.2390	\$.2112	\$.2325	\$.2387
December	.2440	.2500	.2250	.2290	.2160
January	.2519	.2298	.1900	.2040	.1975
February	.2394	.2000	.2050	.2042	.2100
March	.2670	.2185	.1900	.1987	.2075
April	.2000	.1650	.1 80	.1980	.1962
May	.17 5	.1572	.1530	.1580	.1790
June	.1794	.1550	.1500	.1687	.1881
July	.1770	.1505	.1500	.1687	.1885
August	.1 80	.1571	.1475	.1890	.2000
September	.2125	.1600	.1930	.2025	.22 2
October	.2204	.1 50	.2230	.2235	.2400
Av. val. per lb. for each yr.	\$.2190	\$.1 82	\$.1885	\$.1971	\$.2065

The following shows the totals of butter shipped to the various markets of the United States as reported by the creameries of the state. Not all the creameries report the destination of butter shipments:

DESTINATION.	1901.		1902.	
	Per cent.	Pounds shipped.	Per cent.	Pounds shipped.
New York ...	67.4	85,703,374	70.8	88,264,280
Chicago	10.6	5,655,201	8.9	4,792,070
Philadelphia.....	8.5	1,855,910	8.5	1,929,808
Boston	5.4	2,899,008	8.3	1,824,059
New Orleans.....	3.1	1,664,978	8.1	1,698,606
Pacific coast	2.0	1,078,426	1.8	1,001,658
Illinois	.8	152,246	1.5	805,379
St. Louis.....	1.6	843,888	1.4	760,806
Cleveland.....	.7	405,049	.9	458,522
Buffalo	.5	246,452	.8	441,689
Baltimore.....			.5	299,345
Elgin	1.5	804,447	.25	138,559
Miscellaneous		1,617,252		1,490,615
Total		52,925,726		58,899,076

THE CREAMERIES OF THE STATE.

OWNERSHIP—OPERATION—MILK BY TEST—NEW CHANGES.

COUNTIES.	OWNERSHIP— INDIVIDUAL, CO-OPERATIVE OR STOCK COMPANY.					HOW OPERATED.			REC'D G MILK BY TEST OR BY CWT.		NEW CREAMER- IES AND SKIM STATIONS AND PLANTS CLOSED.			
	No. of creameries.	No. of skim stations.	Individual.	Co-operative.	Stock company.	Separator.	Gathered cream.	Combined plant.	By test.	By cwt.	New creameries.	New skim stations.	Total.	Plants closed.
The State	748	172	377	376	165	748	105	65	862	57	34	22	56	97
Adair	8	5	8	3	2	13	...	...	13	...	...	...	...	2
Adams	2	4	...	...	...	6	...	...	6	...	...	...	...	1
Allamakee	7	...	1	...	1	2	4	1	7	...	...	...	...	1
Appanoose	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Audubon	10	1	1	10	...	11	...	...	11	...	...	...	...	1
Benton	10	3	10	2	1	13	...	...	13	...	...	...	...	4
Black Hawk	20	5	5	13	2	16	1	3	20	...	1	...	...	2
Boone	5	2	5	2	...	6	...	1	7	...	...	...	...	1
Bremer	21	1	1	20	...	21	...	...	...	12	...	...	...	...
Buchanan	12	6	3	5	10	15	...	3	18	...	...	1	1	3
Buena Vista	7	3	4	3	3	6	2	2	10	...	...	...	...	2
Butler	17	4	0	...	6	20	1	...	21	...	...	...	...	1
Calhoun	8	2	4	4	2	8	...	2	10	...	2	2	4	4
Carroll	13	...	6	4	3	12	1	...	10	3	1	...	1	...
Cass	1	9	...	...	10	10	...	...	10	...	...	1	1	...
Cedar	7	2	7	...	2	5	3	1	5	4	...	1	1	...
Cerro Gordo	6	...	6	...	...	3	2	1	5	1	...	...	...	1
Cherokee	6	1	7	...	...	7	...	...	7	...	...	...	...	...
Chickasaw	17	2	4	14	1	15	4	...	19	...	1	...	1	1
Clarke	1	3	...	...	...	4	...	...	4	...	...	...	...	1
Clay	10	3	7	2	4	13	...	...	13	...	1	1	2	...
Clayton	19	1	4	8	8	15	1	4	20	...	...	...	...	...
Clinton	12	5	15	2	...	16	1	...	17	...	2	1	3	1
Crawford	3	2	1	1	3	1	4	...	5	...	...	...	...	...
Dallas	5	5	4	1	...	5	10	...	10	...	...	...	...	...
Davis	2	3	5	...	...	3	2	...	5	...	...	1	1	...
Decatur	2	2	2	...	2	3	...	1	4	...	...	1	1	...
Delaware	21	4	9	15	1	25	...	...	23	2	...	1	1	4
Des Moines	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dickinson	5	...	1	4	...	3	...	2	5	...	...	1	1	1
Dubuque	20	...	4	11	5	20	...	...	14	6	...	...	...	2
Emmet	11	...	1	9	1	10	...	1	10	1	...	...	...	...
Fayette	20	...	2	16	2	19	...	...	18	2	...	...	...	...
Floyd	7	...	4	1	2	...	5	2	6	1	2	...	2	2
Franklin	9	3	7	...	1	9	1	2	12	...	...	...	...	...
Fremont	1	...	...	1	...	1	...	...	1	...	1	...	1	...
Greene	3	3	5	1	...	6	...	...	6	...	...	...	...	5
Grundy	12	2	7	5	2	10	4	...	13	1	1	...	...	2
Guthrie	12	5	10	4	3	16	...	1	17	...	1	...	1	...
Hamilton	11	...	5	4	2	10	1	...	10	1	1	...	1	2
Hancock	10	2	3	9	...	9	2	1	12	...	1	...	1	1
Hardin	14	3	4	9	4	16	...	1	17	...	...	2	2	...
Harrison	5	...	2	3	...	4	...	...	5	...	...	...	...	...
Henry	3	...	3	...	...	3	...	...	3	...	...	...	...	1
Howard	10	...	2	4	4	3	6	1	10	...	...	...	...	1

* One condensed milk factory.

OWNERSHIP—OPERATION—MILK BY TEST—ETC.—CONTINUED.

COUNTIES.	OWNERSHIP— INDIVIDUAL, CO-OPERATIVE OR STOCK COMPANY.					HOW OPERATED.			REC'D G MILK BY TEST OR BY CWT.		NEW CREAMER- IES AND SKIM STATIONS AND PLANTS CLOSED.			
	No. of creameries.	No of skim stations.	Individual.	Co-operative.	Stock company.	Separator.	Gathered cream.	Combined plant.	By test.	By cwt.	New Creameries.	New skim stations.	Total.	Plants closed.
Humboldt	12	...	1	9	2	11	...	1	12	...	1	...	1	...
Ida	8	...	2	1	2	1	...	1	8	...	1	...	1	...
Iowa	9	8	5	7	...	8	2	2	12	...	1	1	2	1
Jackson	18	7	17	8	...	17	8	8	12	...	1	1	2	8
Jasper	7	1	4	2	2	6	1	1	8	...	1	1	2	1
Jefferson	5	...	1	2	2	4	...	1	5	...	...	...	...	...
Johnson	8	...	2	1	...	8	...	...	3	...	...	...	...	1
Jones	18	12	23	6	1	80	...	...	30	...	2	1	8	1
Keokuk	7	...	3	2	2	6	1	...	7	...	...	...	...	1
Kossuth	22	...	1	21	...	21	...	1	22	...	...	...	...	...
Lee	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Linn	20	5	18	4	8	24	...	1	17	8	...	1	1	8
Louis	2	...	2	...	...	2	2	...	1	1	...	...	...	...
Lucas	1	1	...	...	...	2	...	...	2	...	...	...	...	...
Lyon	6	...	4	2	...	5	...	1	5	1	1	...	1	...
Madison	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Mahaska	2	...	1	1	1	1	1	...	1	1	...	...	...	...
Marion	1	1	1	1	1	1	1	...	1	1	...	...	...	1
Marshall	8	...	1	6	1	5	8	...	1	1	...	...	...	1
Mills	1	3	...	1	3	4	...	...	4	...	...	1	1	1
Mitchell	11	...	1	9	1	2	8	1	10	1	1	...	1	1
Monona	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Monroe	1	...	1	...	...	1	...	...	1	...	...	...	...	...
Montgomery	1	8	...	...	4	4	...	...	4	...	...	...	...	...
Muscatine	2	1	2	...	1	...	1	2	3	...	...	...	...	1
O'Brien	5	...	2	1	2	5	...	...	5	...	1	...	1	3
Osceola	4	1	5	...	...	5	...	...	5	...	2	...	2	1
Page	4	2	...	...	2	2	2	...	4	...	1	...	1	...
Palo Alto	20	...	18	...	...	20	...	...	20	...	1	...	1	...
Plymouth	10	...	1	7	2	9	...	1	9	1	1	...	1	...
Pocahontas	10	2	8	2	2	8	2	2	12	...	1	...	1	1
Polk	3	1	1	1	3	4	...	...	4	...	1	...	1	1
Pottawattamie	5	2	4	1	2	5	2	...	3	4	...	...	2	...
Poweshiek	5	1	5	1	...	5	1	...	5	1	...	...	8	...
Ringgold	1	1	...	1	1	2	...	...	2	...	...	...	...	1
Sac	11	2	10	1	2	12	...	1	13	...	1	...	1	4
Scott	8	...	8	...	...	1	1	2	1	1	...	...	...	1
Shelby	9	8	1	10	1	9	2	1	12	...	2	...	2	...
Sioux	7	...	5	2	...	5	...	2	7	...	...	...	...	1
Story	14	...	2	10	1	14	...	...	13	1	...	...	...	...
Tama	7	2	8	1	...	9	...	...	9	...	1	...	1	2
Taylor	8	1	2	1	2	3	1	...	4	...	...	...	...	1
Union	4	10	7	1	6	14	...	...	14	...	...	...	...	...
Van Buren	8	2	8	...	2	1	4	...	5	...	2	2	...	...
Wapello	1	...	1	...	...	1	...	...	1	...	...	...	...	...
Warren	2	3	8	1	1	5	...	...	5	...	...	...	...	1
Washington	5	...	5	...	...	8	2	...	5	...	...	...	...	...
Wayne	1	8	4	...	...	4	...	...	4	...	...	...	...	1
Webster	6	1	7	...	...	4	1	2	7	...	...	...	...	4
Winnebago	8	7	1	14	...	14	...	1	15	...	1	1	...	...
Winnebago	8	7	1	14	...	14	...	1	15	...	1	1	...	...
Winneshiek	15	...	6	8	6	1	14	...	15	...	...	...	...	1
Woodbury	3	...	2	...	1	...	2	1	3	...	...	...	...	8
Worth	10	2	...	9	1	9	1	2	12	...	...	...	...	...
Wright	8	...	2	6	...	2	2	4	7	1	...	...	...	1
The State	748	172	877	876	165	748	105	65	882	57	84	22	56	97

* One creamery belongs to agricultural college.

COMPARISONS.

	1897.	1898.	1899.	1900.	1901.	1902.
Total number of creameries and skim stations.	891	954	967	994	980	920
OWNERSHIP.						
Individual.....	504	516	501	524	497	37
Co operative.....	349	349	349	364	360	376
Stock company.....	87	88	116	105	102	165
State property.....	1	1	1	1	1	1
PLAN OF OPERATION.						
Separator.....			842	853	772	748
Gathered cream.....			71	85	92	106
Combined plant.....			50	56	96	65
BASIS OF RECEIVING MILK OR CREAM.						
By the test.....			849	896	890	812
By weight or measure.....			110	98	70	57
CREAMERY CHANGES.						
Number of new creameries	188	90	56	87	85	34
Number of new skim stations...		48	86	84	18	22
Number of plants closed.....	55	58	79	75	87	97

TABLE SHOWING NUMBER OF PATRONS, COWS, FARM SEPARATORS, CREAMERIES USING ACID TEST, CREAMERIES THAT PASTEURIZE THE SKIMMED MILK AND CREAMERIES THAT USE A SKIMMED MILK WEIGHER.

COUNTIES.	No. of creameries reporting.	No. of patrons reported.	No. of creameries reporting number of cows.	No. of cows reported.	No. of creameries reporting hand separators.	Hand separators reported.	No. of creameries using test for acidity of cream.	No. of creameries that pasteurize skimmed milk.	Using skimmed milk weigher.
The state	651	70,948	496	876,877	384	8,828	179	282	801
Adair	9	1,847	8	7,259	2	84	5	1	6
Adams	2	700	2	4,800	2	5	1	1	.....
Allamakee	7	1,528	5	1,800	7	279	2	.....	.....
Appanoose .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Audubon	10	1,062	10	7,475	1	1	7	6	4
Benton	6	584	5	2,085	2	5	.....	4	5
Black Hawk	16	1,866	15	13,272	9	209	4	9	5
Boone	2	156	.....	.....	.....	.....	2	1	4
Bremer	21	1,726	16	14,710	1	2	7	8	10
Buchanan	11	2,142	6	10,651	6	223	4	9	10
Buena Vista	4	561	1	1,600	8	152	8	8	8
Butler	17	1,968	12	9,640	10	88	4	9	8
Calhoun	7	685	5	3,290	4	44	8	4	5
Carroll	13	1,057	11	5,410	5	259	2	3	7
Cass	1	656	1	2,700	1	5	1	1	.....
Cedar	4	646	8	3,047	1	81	1	1	.....
Cerro Gordo	5	449	8	2,400	5	108	.....	2	.....
Cherokee	6	386	4	1,844	2	2	2	3	.....
Chicasaw	16	2,209	11	11,208	9	585	3	5	5
Clarke	1	140	1	1,000	.....	.....	1	1	.....
Clay	8	665	5	2,438	8	28	4	9	8
Clayton	18	2,086	9	9,360	12	523	6	8	6
Clinton	8	489	7	3,800	2	28	1	9	8
Crawford	2	680	2	3,223	2	598	3	3	2
Dallas	4	626	2	2,300	1	2	8	8	1
Davis	1	108	1	650	1	1	.....	.....	.....
Decatur .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Delaware	19	1,668	17	14,861	.....	.....	6	12	12
Des Moines .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dickinson	4	266	3	1,875	4	88	.....	1	2
Dubuque	19	1,148	16	9,008	1	2	3	1	11
Emmet	11	494	11	5,275	6	62	2	5	11
Fayette	20	2,073	16	17,819	4	5	5	11	6
Floyd	5	1,070	3	4,200	5	355	.....	.....	1
Franklin	8	984	5	2,326	4	102	.....	5	2
Fremont	1	50	1	125	.....	.....	.....	1	1
Greene	3	130	1	300	3	9	1	1	1
Grundy	14	1,017	18	8,425	10	107	4	8	6
Guthrie	8	1,185	4	2,864	5	22	1	2	5
Hamilton	8	821	5	4,680	4	27	3	5	3
Hancock	8	554	6	3,596	5	80	4	3	4
Hardin	15	1,582	13	10,958	9	126	4	9	9
Harrison	4	846	3	1,400	1	65	2	1	8
Henry	3	85	2	145	.....	.....	.....	1	1
Howard	7	2,790	6	6,300	7	284	2	8	8

TABLE SHOWING NUMBER OF PATRONS, ETC.—CONTINUED.

COUNTIES.	No. of creameries reporting.	No. of patrons reported.	No. of creameries reporting number of cows.	No. of cows reported.	No. of creameries reporting hand separators.	Hand separators reported.	No. of creameries using test for acidity of cream.	No. of creameries that pasteurize skimmed milk.	Using skimmed milk weighed.
Humboldt	18	888	9	4,762	12	150	4	6	12
Iowa	4	280	4	2,250	3	56	2	3	.....
Jackson	7	825	7	4,698	7	128	2	2	5
Jasper	11	778	7	5,148	4	24	8	4	8
Jefferson	6	468	4	1,200	1	8	1	4	2
Johnson	5	282	8	900	2	20	2	.....	2
Jones	1	256	.....	.....	1	72	1	.....	.....
Keokuk	18	1,784	12	10,885	9	88	2	6	9
Kossuth	6	568	8	1,050	2	28	2	4	2
Lee	21	1,580	16	10,621	11	111	2	11	15
Linn	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louis	17	1,182	9	5,925	1	8	4	5	11
Lucas	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lyons	1	80	1	250	1	8	.....	1	2
Madison	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mahaska	2	260	2	1,850	1	5	.....	1	7
Marion	1	270	1	1,080	1	1	.....	.....	1
Marshall	8	809	6	4,820	5	148	8	.....	.....
Mills	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mitchell	9	1,968	7	8,918	8	304	.....	2	3
Monona	.....	.....	.....	.....	.....	.....	.....	.....	.....
Monroe	1	80	1	400	.....	.....	.....	.....	1
Montgomery	1	200	1	1,000	1	6	1	1	.....
Muscataine	2	270	2	960	2	7	.....	.....	.....
O'Brien	4	278	1	700	2	81	2	2	4
Oscola	1	50	1	500	8	.....	.....	1	.....
Page	8	855	1	800	1	12	1	.....	.....
Palo Alto	19	1,404	14	11,008	9	25	5	6	14
Plymouth	7	525	7	8,820	4	47	1	1	4
Pocahontas	10	578	8	4,164	5	209	2	3	5
Polk	2	240	1	1,000	1	2	.....	2	.....
Pottawattamie	5	1,443	4	2,850	4	460	.....	2	2
Poweshiek	4	895	8	1,780	1	80	1	4	2
Ringgold	1	50	1	180	.....	.....	.....	.....	.....
Sec.	11	828	6	2,381	8	70	6	9	2
Scott	8	195	2	980	2	58	.....	.....	.....
Shelby	7	863	6	4,190	2	278	3	4	2
Sioux	5	815	5	2,675	3	154	2	2	3
Story	14	1,513	13	10,075	8	28	4	5	7
Tama	4	820	4	2,800	1	10	.....	6	1
Taylor	3	440	2	1,200	8	209	1	1	1
Union	4	1,180	2	6,800	2	2	5	3	.....
Van Buren	2	250	2	725	1	8	.....	.....	.....
Wapello	1	180	1	150	.....	.....	.....	.....	.....
Warren	2	175	1	450	1	1	1	1	.....
Washington	3	454	2	1,000	1	16	.....	2	.....
Wayne	1	490	.....	.....	1	1	1	1	.....
Webster	5	543	8	1,570	3	182	1	2	3
Winnebago	7	986	6	7,681	4	88	1	6	4
Winneshiek	14	1,945	12	10,075	14	292	.....	.....	1
Woodbury	2	182	1	300	2	112	2	.....	.....
Worth	10	999	9	6,915	9	160	5	8	3
Wright	7	529	6	8,387	8	873	2	2	2
The State	651	70,948	486	876,877	384	8,323	1.9	282	301

COMPARISONS.

	1899.	1900.	1901.	1902.
Number of patrons of creameries	90,864	91,417	90,876	81,532
Average number of patrons per creamery	116	118	114	109
Total number of cows	625,512	681,829	627,994	579,700
Average number of cows per creamery	804	781	801	775
Average number of cows per patron	7	7	7	7

VALUE OF CREAMERIES AND SKIM STATIONS—WAGES OF BUTTER MAKERS.

COUNTIES.	VALUES OF CREAMERIES AND SKIM STATIONS.				WAGES OF BUTTER MAKERS.		
	Number creameries reporting.	Average value.	Number of skim stations reported.	Average value.	Number creameries reporting.	Average wages.	Average months employed.
The State .....	.....	.....	.....	.....	.....	.....	.....
Adair	9	\$ 4,086	3	\$ 1,886	6	\$ 51.25	12
Adams	1	3,000	1	1,500	2	67.50	12
Allamakee	7	3,714	.....	.....	6	59.00	12
Appa cose .....	.....	.....	.....	.....	.....	.....	.....
Audubon	8	3,582	.....	.....	10	74.80	12
Benton	6	3,500	.....	.....	5	62.00	12
Black Hawk	15	3,100	1	1,000	11	59.00	12
Boone	4	3,875	.....	.....	3	66.00	12
Bremer	18	3,208	.....	.....	18	59.86	12
Buchanan	8	3,750	2	2,000	9	65.88	12
Buena Vista	4	3,750	2	1,500	4	68.75	12
Butler	15	3,358	3	1,486	12	55.00	12
Calhoun	7	4,590	2	1,500	8	58.88	12
Carroll	11	4,000	1	1,500	7	51.82	12
Cass	1	7,500	1	1,000	1	75.00	12
Cedar	4	1,500	.....	.....	2	50.00	12
Cerro Gordo	4	2,900	.....	.....	5	50.00	11.5
Cherokee	6	2,400	1	700	3	50.00	12
Chickasaw	15	3,583	.....	.....	16	61.25	12
Clarke	1	2,500	1	1,000	1	75.00	8
Clay	9	3,300	3	1,850	7	49.61	10.6
Clayton	15	3,558	.....	.....	15	59.00	12
Clinton	9	3,066	.....	.....	8	67.88	8
Crawford .....	.....	.....	.....	.....	2	59.75	12
Dallas	4	3,125	2	2,060	3	59.66	12
Davis	1	2,500	1	800	1	40.00	12
Decatur .....	.....	.....	.....	.....	.....	.....	.....
Delaware	19	3,552	.....	.....	14	58.82	12
Des Moines .....	.....	.....	.....	.....	.....	.....	.....
Dickinson	4	3,750	.....	.....	4	62.50	10.5
Dubuque	18	2,755	.....	.....	17	47.40	10.4
Emmet	11	3,410	.....	.....	10	59.00	12
Fayette	17	4,186	1	2,000	18	56.00	12
Floyd	4	2,375	.....	.....	4	62.50	12
Franklin	8	3,612	1	2,000	7	60.75	12
Fremont ..	1	5,500	.....	.....	.....	.....	.....
Greene ..	2	3,800	.....	.....	2	60.00	8

VALUE OF CREAMERIES AND SKIM STATIONS ETC.—CONTINUED.

COUNTIES.	VALUES OF CREAMERIES AND SKIM STATIONS.				WAGES OF BUTTER MAKERS.		
	Number creameries reporting.	Average value.	Number of skim sta- tions reported.	Average value.	Number creameries reporting.	Average wages.	Average months employed.
Grundy.....	12	\$3,841	1	\$2,000	9	\$56.10	12
Guthrie.....	5	4,500	1	2,000	5	57.50	12
Hamilton.....	7	3,428	1	2,000	3	67.37	11.4
Hancock.....	6	3,388	1	1,400	6	52.80	12
Hardin.....	14	3,490	2	1,950	14	56.00	12
Harrison.....	4	3,325	.....	.....	3	52.00	11.8
Henry.....	2	1,750	.....	.....	2	55.00	12
Howard.....	8	2,325	.....	.....	3	55.00	11
Humboldt.....	12	2,756	.....	.....	11	55.27	12
Ida.....	8	2,888	.....	.....	2	55.00	12
Iowa.....	7	3,257	2	1,250	7	51.00	8.4
Jackson.....	12	3,203	8	1,700	8	47.44	10.4
Jasper.....	7	3,078	.....	.....	6	51.66	11.4
Jefferson.....	4	3,518	.....	.....	4	50.00	12
Johnson.....	1	4,000	.....	.....	1	50.00	10
Jones.....	15	3,440	.....	.....	10	61.36	11.3
Keokuk.....	6	3,588	.....	.....	6	49.38	12
Kossuth.....	20	3,475	.....	.....	20	57.70	12
Lee.....	.....	.....	.....	.....	.....	.....	.....
Linn.....	12	3,166	2	2,250	8	50.00	12
Louisa.....	.....	.....	.....	.....	.....	.....	.....
Lucas.....	1	3,000	.....	.....	.....	.....	.....
Lyon.....	3	2,896	.....	.....	1	75.00	12
Madison.....	.....	.....	.....	.....	.....	.....	.....
Mahtaska.....	2	4,251	.....	.....	2	50.00	10
Marion.....	1	3,000	.....	.....	.....	.....	.....
Marshall.....	3	3,120	.....	.....	3	46.00	7.3
Mills.....	.....	.....	.....	.....	.....	.....	.....
Mitchell.....	8	2,500	.....	.....	8	57.50	12
Monona.....	.....	.....	.....	.....	.....	.....	.....
Monroe.....	1	2,500	.....	.....	.....	.....	.....
Montgomery.....	.....	.....	.....	.....	1	75.00	.....
Muscatine.....	2	2,750	1	1,000	2	46.00	12
O'Brien.....	4	4,800	1	1,250	3	73.38	12
Osceola.....	1	3,500	.....	.....	1	50.00	12
Page.....	8	3,666	.....	.....	.....	.....	.....
Palo Alto.....	18	3,000	1	1,500	14	45.70	10
Plymouth.....	7	2,816	.....	.....	6	62.00	11.3
Pocahontas.....	9	2,800	2	1,400	6	55.40	11.5
Polk.....	1	4,000	1	2,000	2	50.00	12
Pottawattamie.....	5	3,750	2	1,400	4	57.50	12
Poweshiek.....	4	3,750	1	1,200	2	57.50	10.3
Ringgold.....	1	2,500	.....	.....	1	45.00	12
Sac.....	10	3,330	.....	.....	9	43.47	12
Scott.....	3	2,833	.....	.....	2	55.00	6
Shelby.....	6	3,666	.....	.....	6	59.25	12
Sioux.....	3	3,233	.....	.....	2	52.50	10
Story.....	13	4,780	.....	.....	13	63.80	12
Tama.....	6	3,666	2	2,000	4	50.00	12
Taylor.....	3	2,833	.....	.....	2	50.00	12
Union.....	4	4,125	4	2,085	4	58.75	12
Van Buren.....	2	2,250	.....	.....	2	45.00	10
Wapello.....	.....	.....	.....	.....	.....	.....	.....
Warren.....	2	3,500	1	1,100	2	40.00	12
Washington.....	3	3,333	.....	.....	2	70.00	12

VALUE OF CREAMERIES AND SKIM STATIONS ETC.—CONTINUED.

COUNTIES.	VALUES OF CREAMERIES AND SKIM STATIONS.				WAGES OF BUTTER MAKERS.		
	Number creameries reporting.	Average value.	Number of skim sta- tions reported.	Average value.	Number creameries reporting.	Average wages.	Average months employed.
Wayne.....	1	6,000	1	2,500	1	50.00	12
Webster.....	5	8,160	1	2,000	2	70.00	11.5
Winnebago.....	7	4,040	2	1,250	7	64.00	13
Winnechiek.....	12	2,560	...	...	18	47.69	12
Woodbury.....	2	2,750	...	...	2	70.00	12
Worth.....	8	8,060	2	1,700	9	61.40	12
Wright.....	8	2,848	...	...	7	51.80	12
The state	...	...	...	...	...	...	...

Done
1902

Total number Farm Separators
8323

Farm Separator

8	OSCEOLA	38	EMMET	62	WINNEBAGO	33	WORTH	394	HOWARD	284	MONROVIA	292	ALABAMA	279
SIoux	O'BRIEN	31	CLAY	28	PALMISTO	25	HANCOCK	108	CHESTER	585	CLAYTON	5	CLAYTON	523
FLYMOUTH	CHEROKEE	2	BENJAMIN	152	POCAHONTAS	409	WRIGHT	373	FRANKLIN	102	BUTLER	33	BREMER	2
WOODBURY	IDA	56	SAC	70	CALLHOUN	44	WESTER	132	HAMILTON	27	GRUNDY	209	BUCHANAN	223
MONONA	CRAWFORD	598	SHELBY	278	BUTHRIE	22	DALLAS	2	BOONE	132	STORY	23	JACKSON	94
HARRISON	POTAWATOMIE	460	CASS	5	ADAIR	34	MADISON	1	WARREN	1	MARSHALL	148	CLINTON	28
MILLS	MONROVIA	6	ADAMS	5	UNION	2	CLARKE	1	LUCAS	1	JASPER	3	SCOTT	58
PREMONT	PAGE	12	TAYLOR	209	RIMBOLD	2	DECATUR	1	WAYNE	1	MAHASKA	123	MUSCATINE	7
											JOHNSON	72	LOUISA	16
											TAMA	10	JEFFERSON	20
											BENTON	5	HENRY	3
											LINN	3	LEE	3
											JONES	35	WINDGATE	1
											CEGAR	31		
											WASHINGTON	16		
											KEOKUK	23		
											MAHASKA	5		
											MONROE	20		
											DAVIS	1		
											WINDGATE	3		
											LEE	3		

19 Farm Separator Cranes

FARM SEPARATORS.

There are eighty-three creameries of the state which receive cream from twenty-five or more farm separators, ranging in number from twenty-five up to 688 for a single creamery. These creameries have 15,500 patrons, of whom 6,250 have farm separators. The total number of creamery patrons of the state is 81,532, and the number of farm separators, so far as reported, is 8,323, and there are 334 creameries, more than two-fifths of the total number of creameries, which have one or more farm separator patrons. The total number of creamery patrons as given above is obtained by multiplying the average number of patrons of the creameries reported, by the total number of the creameries, and hence, is approximately correct. The number of separators is not so estimated, but it is the real number of farm separators actually reported by those creameries that make a report at all. Hence, the proportion of farm separator patrons may be a trifle higher than is shown by these figures. The number of farm separators is 10.2 per cent of the creamery patrons of the state. There are nineteen plants in the state that receive only farm separator cream.

There has been a great deal of discussion of the merits or demerits of the farm separator system, and some of the most extreme views advanced have been by men who knew nothing of the system and its results except the knowledge they may have gained from observation. Some of the views have been correct, and others have been erroneous. With the hope of getting together the ideas of men who have actually had experience in making butter from farm separator cream in the creameries of Iowa, the following blank was sent out to the butter makers of the state that had reported more than twenty-five separators among their patrons, and the tables following have been compiled from reports received from these creameries.

1. County in which your creamery is located.....
2. Name of creamery
3. Whole number of patrons.....Number sending cream from hand separators.....Number sending milk

4. What difference in price, if any, do you make between butter fat in milk and in cream?.....
5. Have any of your patrons abandoned the use of the separator after using it a reasonable time?.....How many?.....And for what reason?.....
6. Is the use of the hand separator in your vicinity increasing?
7. Is the quality of the butter made at your creamery poorer on account of the hand separator cream you receive?.....
8. Have you had any complaint of the quality of the butter by your commission man?.....
9. Do your cream patrons receive more net returns for their butter fat than the whole milk patrons of your creamery or of neighboring creameries?.....
10. Do you consider the hand separator system a satisfactory one?
11. Do your patrons take better care of their cream than they did when they first began to use the separator?
12. The dairy commissioner will be glad to know your views on the hand separator system as fully as you may desire to write them.

The following tables are the answers received from three classes of creameries: First, from those receiving hand separator cream and whole milk, second, from those receiving hand separator cream and gravity cream and no milk; third, from creameries receiving hand separator cream only. These tables represent forty-two creameries of the state having 6,766 patrons, of whom 3,728 send cream from farm separators.

The first table shows very conclusively that scarcely any creameries are paying more for butter fat in cream than for butter fat in milk. Theoretically, the cream costs less money to make into butter than the milk, but the difference in quality more than compensates for this difference in the cost of manufacture, so that the usual practice is to receive the cream and milk by weight and test and pay for them on the same basis.

From time to time reports have been circulated that in different localities the hand separator was being discarded by its former users. The reports given here in answer to the question "Have any of your patrons abandoned the use of the separator after using it a reasonable time?" do not bear out the thought that the users of hand separators are generally disappointed in them. The hand separator in Iowa is no longer an experiment, and if the owners of hand separators in general were not reasonably satisfied with the use of the separator, much larger numbers of the machines would have long since been discarded. Such not being the case, it would seem very certain that the hand separator patrons of the creameries reported in the foregoing tables are well satisfied with the use of the separator and prefer the hand separator system to the whole milk system. If this be true, then the increase in the number of hand separator patrons in Iowa in the future will be equal to the increase in the hand separators during the last several years, because the satisfied patron is the best possible advertising medium for the sale of other machines. That this is true is further shown by the almost uniform answer that the use of the hand separator is now increasing. The number of hand separators reported in 1898 was 904; in 1899, 1,762; in 1900, 3,332; in 1901, 5,231; in 1902, 8,323, so that the increase for the last year has been nearly sixty per cent, a result which could not have been achieved if former users of hand separators were dissatisfied with them and were discarding them, as alleged.

The ideas of the creameryman in regard to the hand separator system are not quite the same as those of his patron. The question in regard to the quality of butter brings forth answers which seem to indicate very clearly a majority opinion that butter makers have found themselves unable to make from hand separator cream a quality of butter equal to that which they are able to make from whole milk. However, most of the butter makers who confess to making a poor quality of butter from hand separator cream assert that they are still getting a "half

cent above" and a uniform score of extras or better on the market to which they ship, and that it is only occasionally, usually during the warmest weather, that their butter is off flavor by reason of their hand separator cream. They further assert that complaints of the quality of the butter by the commission man are very rare, and yet, they freely admit that the butter is not so good as it ought to be. Several of the larger hand separator creameries are selling their butter on a contract which requires them to produce extras, and a number of the creameries of the state are making an excellent quality of butter from hand separator cream, but the majority of creameries receiving hand separator cream are not making so good a quality of butter as they did under the whole milk system. A good quality of butter *can* be made from hand separator cream, but most butter makers are unable to accomplish this result. This is the difference between theory and fact, and the small quantity of first class butter made from hand separator cream proves only that the theory is correct as a theory, while the larger quantities of lower grade butter made from hand separator cream prove that the theory is not easy to put into practice.

If the creamery patron could be induced or compelled to take better care of his cream and deliver it to the creamery every day, the butter maker would be able to make from it a first class product, but in the majority of cases it is seemingly impossible to get the cream to the creamery in a reasonably good condition.

Naturally the operators of hand separator creameries think that their patrons receive more net returns for their butter fat than the patrons of the whole milk creameries receive, and even some of the butter makers in the whole milk creameries also assert this fact. They add as an explanation the statement that they pay the same price per pound for their butter fat to their milk and cream patrons and that the cream patron has less expense in getting his product to the factory. They assert that it costs two and one-half cents per pound of butter fat to haul the whole milk to the creamery, while the cost per pound of butter fat for hauling cream is about one cent, and that this is the only saving that the hand separator patron makes. Some of them suggest, on the other hand, that there are losses in the skimmed milk from the farm separator which more than equal the difference in the cost of hauling. All of the butter makers, however, who express an opinion on this point, suggest that the

skimmed milk from the farm separator has more value than the skimmed milk from the creamery. Generally speaking, this must be true, because the skimmed milk from the farm separator is fed usually before it has time to sour or become contaminated, while the skimmed milk from the creamery is from twelve to twenty-four hours old. This fact is one of the chief reasons why the owners and users of farm separators are so uniformly satisfied with their machines, notwithstanding the allegations of losses of butter fat in the skimmed milk and of losses at the creamery because of poorer quality of butter made. The fact that the farmer reckons the value of his skimmed milk more carefully than he did several years ago is one of the good signs in the present dairy situation. Another is that nearly all the butter makers report that their patrons take better care of their cream than they did when they first began to use a separator.

There seems to be no question but that the hand separator has come to stay. The average number of cows per patron for the state is about seven, and a moment's thought will show that the number of creamery patrons who have a number of cows sufficiently large to warrant the expense of a hand separator is very much less than the total number of creamery patrons; hence, the number of farm separators now in use, which is about ten per cent of all the creamery patrons, is probably twenty per cent, possibly thirty per cent, of the creamery patrons of Iowa who have twelve or more cows. The rapid increase in the number of farm separator creameries is also an indication of the faith in the system which the builders of these creameries have. Considerable sums of money have been invested in central plants, to which it is expected the hand separator cream and other cream will be shipped by rail, and the success of such an enterprise depends upon the continuance of the hand separator system. Certainly these investments would not have been made unless the investors are reasonably sure that their system will continue. Despite all reports to the contrary, there is no locality in the state where any large numbers of farm separators have been abandoned; and, on the other hand, there is no locality in this state where any reasonable number of separators have ever been owned and operated in which the separator system is not increasing with great rapidity. It is also true that manufacturers of hand separators are enlarging their plants and making every effort to produce enough separators to fill their orders. All of these facts indicate a

future increase in the number of hand separators used in Iowa corresponding with the respective increases for the last four years. It is, therefore, a waste of energy to spend our time only in condemning the hand separator system and not making proper efforts toward educating the users of the separators so that they shall send to the creamery a proper product. The butter maker is equally to blame with the farmer when he receives cream that is too old, or that has been contaminated by a filthy separator, or by being kept under improper conditions. For business reasons he may not be able to refuse outright to accept such cream, but he ought to insist that the cream be better in the future, and he ought to point out to the farmer the way to make it better. The hand separator system will certainly continue, and it is folly not to make every effort to improve the quality of the cream brought to the creamery, and consequently the quality of the butter made from the cream. It is certain that the hand separator system has a great many faults. It is equally certain that its advantages appeal to the farmer much more than its disadvantages, and this being the case, the farmers will continue to buy and use hand separators and the butter makers and creamery operators will be compelled to make the best of the situation; and the best of the situation will not be obtained by attempting to induce the farmers to discard the separators.

A number of butter makers complain that the agents for hand separators have been asserting that their particular machine does not need washing more than once a week. The dairy commissioner will be very glad to assist in combating this statement wherever it is made. The laws of this state require that the patron shall not send to the creamery "any unclean, impure, unhealthy milk or cream," (section 4989), and certainly cream from a separator that is not washed after each time it is used could not, by any stretch of the imagination, be called either clean, or pure, or healthy. The dairy commissioner does not believe that any manufacturer of separators desires to have his agents use this kind of an argument in order to sell the machines, and if creamerymen will report such cases to the dairy commissioner's office, the matter will be taken up with the employers of these agents with the belief that the offending agent will be better controlled by his employer thereafter. Another fault of the hand separator system, which ought to be easily remedied, is the fact that most of the hand separator cream is not so rich

as it should be. The reports made to this office indicate that hand separator cream ranges all the way from twelve per cent up. The butter maker should insist that the hand separator cream which comes to him should test above thirty-five per cent. There will be no disadvantage in this to the farmer, because his machine will skim as closely when skimming a heavy cream as it will when skimming a lighter cream. He will also save in transportation and have more of his product left at home. The butter maker will have an advantage with the heavier cream, for the reason, that the acid in the cream is found in the milk serum and not in the butter fat; hence, there will be less of an "undesirable starter" in a forty per cent cream than in a twenty per cent cream, and he will be able to dilute the heavier cream with his own better starter and the result will be a better grade of butter.

The butter maker should insist that the farmer wash his separator after each time it is used, because otherwise the cream will become inoculated with bacteria from the slime which is found in every separator.

The butter maker should insist, where it is at all possible, that the cream be delivered to the factory every day, for the reason that under the best possible farm conditions, the cream necessarily deteriorates in quality from the time it is separated from the milk.

The butter maker should insist that the farmer skim thirty-five or forty per cent cream, for the reason that he will be able to use his prepared starter to the best advantage.

The farmer should then insist that the butter maker make an accurate test of his cream and that he make a quality of butter which will bring the highest quotations.

CREAM TESTING.

The importance of accurate cream testing is very great. With ten per cent. of our creamery patrons sending cream instead of milk the testing of this product should receive more attention. Cream testing is just as easy as the testing of milk if one has the proper apparatus with which to do the work. As frequently pointed out the pipette is a measure of a certain *weight* of milk, 18 grams. Milk varies but little in specific gravity and hence the 17.6 cc. pipette will always deliver the same weight of milk. But cream varies greatly in specific gravity in proportion to the amount of butter fat it contains, and when it is mixed or stirred it may contain unknown quantities of air bubbles. So that it is not possible to get accurate weights of cream by means of any pipette. This is particularly the case with cream that tests above 20 per cent.

The only absolutely accurate manner of testing cream is to weigh the cream into the bottles and then proceed in such a way that the tests shall be a clear yellow color. The cream must be cooled to 65 or 70 degrees before mixing with the acid or the resulting test will be black or dirty white instead of the golden yellow. Cream does not require quite so much acid as milk to dissolve the solid parts in the test and if too much acid is used, or too strong acid or too warm acid, the test will be spoiled. A creamery receiving separator cream should use a cream scale to weigh the cream and use every effort to have the tests accurate so that the farmer may get what is coming to him in every case.

This department sent out last spring a table of corrections to be used when using the pipette to measure the cream for testing, but it is not claimed that the use of this table will result in absolutely accurate tests and the scales should be used if at all convenient to obtain them. Some of the manufacturers of glassware are now making the 30 per cent. cream bottles with a slightly longer and narrower neck so that the scale on the bottle is three and a half inches long instead of two and a half inches, and the neck of the bottle correspondingly narrow. Insist on having this kind of cream bottles and if your dealer cannot supply you

this department will be glad to inform you how to obtain them. The best and most approved apparatus for testing is none too good and the best should be found in every creamery. The bottles here mentioned are for use with the usual form of test machine. Some of the larger creameries have had made special patterns of testers that will carry a bottle ten or twelve inches long and which has a scale which reads to 50 per cent. For testing heavy cream such an apparatus is admirable.

CHEESE MAKING IN IOWA.

The number of cheese factories in Iowa has never been very large, nor the amount of cheese made enough to make a beginning toward supplying the demands of our own people. The number of cheese factories as shown by the dairy commissioners' reports are as follows:

1891, 64; 1895, 81; 1896, 71; 1897, 76; 1898, 67; 1899, 69; 1900, 73; 1901, 59; 1902, 59.

In 1894 there were 780 creameries and skim stations, which made 54,572,602 lbs. of butter, an average of 70,000 pounds. In 1902, there are 920 creameries and skim stations, which made 77,885,696 pounds of butter, an average of 84,000 lbs. of butter. From these figures, it will be seen that the number of creameries has increased about one-sixth and their butter product has increased nearly one-half, and yet, the number of cheese factories of the state has not shown any preceptible increase during these eight years.

A study of the following table will in some degree make plain the reasons why butter making and creamery operation has increased much more rapidly than cheese making. The average amount of butter made by the creamery from each cow is 135 pounds, which has a value of about \$27.00. The value of the skimmed milk from each cow is variously estimated at from \$3.00 to \$5.00 so that the total value of the product of the cow in the form of butter is not far from \$30.00.

The average number of pounds of cheese, per cow, as shown by the following table, is only 200 pounds, and has a value at 10 cents a pound of \$20.00. The by product, whey, can not exceed in value a dollar, so that the total value of the product of the cow,

when made into cheese, under existing Iowa conditions, in existing Iowa cheese factories, is \$21.00.

The cheese factories report that the expense of cheese making varies from one cent a pound to one and four-tenths cents. It takes approximately ten pounds of milk to make a pound of cheese and twenty-three pounds of milk to make a pound of butter. The cost of making a pound of butter is about 2.25 cts. From this, it will be seen that the expense of making milk into butter is practically the same as the expense of making cheese. The expense of hauling the milk will be the same in either case, so that under existing conditions, the income from the cow whose product is sent to the creamery is about fifty per cent more than the income from the cow, whose milk is sent to the cheese factory.

There are about a dozen cheese factories in the state that are operated on a scale sufficiently large to make them profitable, and they are making a product that will compare favorably with the cheese from other states. These factories, without exception, were established, either before creameries became so general, or in localities where conditions are much different from the average farm conditions in Iowa.

The plain fact of the matter is that cheese factories are not now, and never have been, popular in Iowa, for the reason that the operation of the cheese factory does not fit into the usual farmer's plans of raising hogs and cattle. If our farms were forty or eighty acres, instead of 160 or more acres, the plan of our agricultural operations would have to be different from what it is, and the making of cheese would no doubt be a popular and profitable industry. The man who sends his milk to a creamery has left in his skimmed milk the very thing that he needs to raise the pigs and the calves, to which he will later feed his corn and grass and hay. The man who sends his milk to a cheese factory has no such valuable by-product, and is almost as restricted in the raising of pigs and calves as the man who milks no cows at all, with the additional disadvantage that he must raise his calves by hand, while the man who milks no cows at all can let his calves run with the cows. Cheese factories in Iowa might be made profitable if they could secure the patronage of a reasonable number of cows, but experience shows that in most cases they cannot secure such patronage, and that the creameries can secure the patronage, and hence, in the competition, the creamery has the advantage over the cheese factory.

	Number reporting.	Value of factory.	Aggregate number of months run.	Pounds of milk received.	Pounds of cheese made.	Number of patrons.	Number of cows.
Adams	1	\$ 1,000	5	144,000	13,680	20	100
Appanoose.....	3	1,700	24	588,428	62,000	55	255
Benton.....	2	7,000	24	2,413,829	198,000	110	1,100
Black Hawk.....	2		24	2,047,697	200,000	229	
Carroll.....	1	2,000	8	118,588	28,083	48	
Cerro Gordo.....	2	2,200	20	1,109,187	111,364	50	370
Crawford.....	1	1,200	11	500,000	50,000	18	200
Clarke.....	1	1,250	10	100,000	60,000	33	
Decatur.....	1	500	8	18,000	1,200	10	40
Floyd.....	1	5,000	12	50,000	85,000	40	
Greene.....	1	5,000	12	89,000	274,710	94	1,200
Guthrie.....	1	2,000	9	90,000	90,000	50	300
Hardin.....	1	2,000	12	50,000	75,000	54	250
Howard.....	2	2,000	22	1,46,208	112,620	85	500
Humboldt.....	1	1,000	8	35,000	53,000		100
Jefferson.....	3	8,700	33	1,38,750	160,375	162	500
Johnson.....	1	8,000	9	78,000	15,000		
Kiokuk.....	1	2,500	2	11,000	1,100	10	
Marshall.....	1	4,000	5	1,210,000	124,066	128	800
Monroe.....	3	750	30	32,840	27,000	15	100
Muscatine.....	1	1,500	12	350,000	55,000	25	150
Page.....	1	1,800	12	980,000	98,000	90	500
Poweshiek.....	2	4,000	24	1,600,000	154,412	55	600
Story.....	1	4,000	12	1,061,886	10,000	120	
Taylor.....	3	8,500	36	1,850,000	182,000	160	1,300
Washington.....	2	3,500	20	1,508,617	141,616	0	525
Wayne.....	4	5,400	16	658,374	64,634	200	1,140
Totals.....	44		415	26,926,967	2,460,960	1,981	10,020
Averages.....		1,708	9.2	641,118	59,522	46	236

Average number of pounds of cheese per cow, 200. Fifty-nine cheese factories must make 8,511,798 pounds of cheese worth approximately \$850,000.

PAMPHLET CONTAINING DAIRY LAW.

The following sixteen pages have been issued in pamphlet form and about 12,000 copies have been distributed among the creamery patrons and dairymen of the state. A small number of copies still remain on hand for distribution.

This pamphlet is printed for distribution among persons interested in dairying in Iowa and copies will be sent free of charge upon request; creamery operators can secure without cost copies for distribution to their patrons and the commissioner earnestly hopes that creamery men will use this pamphlet, as well as other means, to help in raising dairying in Iowa to a higher standard than ever before.

This department is supported by the state for the benefit of the dairy industry of Iowa, and any assistance or information that the dairy commissioner can render to any dairyman or creamery man of the state will be given. No fees of any kind are required. The department will be glad to assist farmers in the compounding of proper rations for milk production, or to answer, so far as possible, questions bearing upon the profitable production of milk and the manufacture of butter and cheese.

Iowa is a great dairy state. The creameries of the state annually make about 80,000,000 pounds of butter. The census of 1900 says that we make 61,789,288 pounds of butter on our farms. The same authority says that there is made in the United States 420,954,016 pounds of creamery butter, and 1,071,745,127 pounds of butter produced on farms. So that Iowa, with 56,025 square miles of area, produces almost 20 per cent of the creamery butter, and nearly 10 per cent of all the butter made in the United States. The value of our dairy products is about \$28,000,000 annually, to which must be added the value of milk and cream consumed as such, and the value of the skimmed milk and other by products which must aggregate, perhaps, \$5,000,000 more. All of these figures are very large and naturally are a source of some pride to those engaged or interested in the dairy business. But our pride in this does not increase our bank accounts.

The average number of cows kept by the creamery patron is only seven, and the average butter production per cow is less

than 140 pounds. If it is true that it costs \$25.00 per year to keep a cow it will be seen that there is not an extraordinary profit in the product of the average cow. The profits in dairying would be larger and more certain if the cows were fed and cared for with more attention to proper methods, and the number of cows would be very much greater if the possible profits in dairying were better understood. The profits of dairying will be largely increased,

First, by keeping the right kind of cows instead of scrubs. The only sure test of the value of a cow for milk production is the scales and the Babcock test. By their use the farmer can know to a certainty which of his cows give him the least return for their feed, and they should be sold from his herd.

Second, by proper feed and care. Not even the best of milk cows can return a profit if their feed and winter shelter consists of a straw stack. Comfortable quarters, considerate treatment, regularity in feeding and milking and a suitable ration are prime essentials in securing a large flow of milk. It is folly to spend money for mill or by products to feed to cows unless the first three essentials are provided.

In selecting cows to be kept for milking purposes, 5,000 pounds of milk and 200 pounds of butter per annum is a standard which the profitable cow ought to reach or exceed. It is plain that the value of the cow's product must be measured by the value of her butter added to the value of the skimmed milk; and that a cow that gives less than 5,000 pounds of milk might easily make more than 200 pounds of butter or, vice versa, depending upon the test of the milk. A very little labor expended in ascertaining which of the cows are supporting their owner, and which ones are being supported by him, will be a source of great profit to him. A number of late investigations have clearly shown that cows in the same community return all the way from 50 cents to \$2.00 for each dollar's worth of their feed. Eliminate the 50 cent cow.

Having selected the best cows of the herd and having replaced the poorest ones with better ones, proper handling becomes of more importance than ever. No one doubts that a reasonable expense in making the cow comfortable both in winter and summer, or that patience and kindness in treatment, and regular hours of feeding and milking bring ample returns for the trouble taken. Too many cows lack a sufficient supply of water, or are compelled to drink from muddy ponds or from a supply that is ice cold, all of which loses money for the owner. But the greatest loss is occasioned by improper feeding.

Experiment stations and scientific people have made innumerable tests of feeding stuffs and while their conclusions cannot be made up into mathematically correct rules which will apply to all

cases, yet certain principles have been established with reasonable accuracy, and any wide variation from them in feeding is practiced at the expense of the product of the cow. These principles are accepted by all authorities on feeding.

The feeder must take account of three groups of nutrients in feed stuffs, protein, carbohydrates and fats. A certain proportion must exist between these three classes of nutrients in order to secure the largest production of milk possible for the animal. The digestible fats and carbohydrates are the producers of heat and energy, or are the source of the fat deposited upon the body of the animal. The fat is about two and one-half times as valuable for these purposes as the carbohydrates. Protein may also be used by the animal in the production of both heat and energy and in a general way may take the place of the other nutrients, but neither the carbohydrates nor the fat can take the place of the protein in the formation of the muscles, hair, brain and nerves, and the casein and albumen of the milk. Hence protein is an absolute essential for the production of milk by an animal. It is easy to see that the proper amount of protein, fed in connection with the proper amount of carbohydrates and fat, will result in the maximum production of milk, and that a lesser amount of protein fed would result in a reduction of the amount of milk for lack of material out of which one of its parts may be produced.

If the cows give milk at all its average composition will be about the same and no change in the feed will result in a permanent increase or decrease of any of the constituents of the milk of that particular cow. The popular idea that by feeding a lot of corn, or anything else, the butter fat may be increased is a fallacy that has been disproved by scores of careful experiments. The cow gives milk with a certain percentage of fat in it, which is subject to changes by reason of excitement or heat or cold or condition of health, but no condition of feeding can make a 5 per cent cow out of one that naturally gives but 3 per cent milk.

If the cow is giving normal milk its constituents, other than the fat, will be very nearly the same as that found in the milk of other cows.

The individuality of cows varies a great deal and not only will a certain cow give milk that will average about the same in butter fat, but there will be a maximum quantity of milk which she can give no matter what the conditions. It is just as useless to try to increase the maximum quantity of milk beyond the cow's capacity as it is to try by feeding to increase the butter fat in the milk. No system of feeding can make a 30 pound cow out of one that naturally will give but 10 pounds of milk. Hence the necessity for selecting cows which have the capacity for giving such a

quantity of milk of such a per cent of butter fat that her production of butter and the skimmed milk that is left will be worth more than her feed.

All that proper feeding can do is to keep the cow up to her maximum of milk giving, instead of allowing her to have an improper ration which results in her giving less milk than the maximum.

Long continued and careful experiments have shown that a cow giving 20 to 25 pounds of milk must receive each day 2 to 2.5 pounds of digestible protein, 12 to 13 pounds of digestible carbohydrates and from .4 to .8 of a pound of fat. This is the ration that the cow of average size, say about 1000 pounds, should have to enable her to produce the quantity of milk stated. It is evident that a smaller cow would require a little less and a larger cow would require more feed, but about in this proportion. If one has an extraordinary cow that gives 30 or 40 pounds of milk he will have to feed more protein, because it is out of the protein that the casein of the milk is produced, and from no other source. Also that as the cow falls off in milk the amount of protein that is necessary is less than the standard. The point should be borne in mind that the carbohydrates and fats of the feed and a part of the protein is for the maintenance of the animal, and only the excess of the protein is necessary for the production of the milk. Since protein is the expensive portion of the feed, it will not be profitable to feed more than is necessary, but it will not otherwise do any harm if the protein is in excess.

On page 10 of this pamphlet will be found tables showing the percentages of dry matter, protein, carbohydrates and fats in about all of the feeds common in Iowa. Or these numbers may be considered as showing the number of pounds of each of the nutrients in 100 pounds of the feeds. A study of this table will show that a cow feeding on grass will, if she eats 100 pounds of grass per day, get as much protein as called for in the standard of rations. If she gets clover pasture she will do better yet, but green corn will not furnish the amount of protein required. If the cow is fed exclusively upon timothy hay, for instance she will not get sufficient protein, for the reason that about 25 pounds of hay is all that she could eat and this would contain less than one pound of protein. If the cow were fed 25 pounds of alfalfa she would get 2.7 pounds of protein, 9.4 of carbohydrates and .3 of a pound of fat, which is more than enough protein and too little of the others. So that neither timothy nor alfalfa hay would make the proper feed alone. It is evident that something containing an excess of protein, such as oil meal, must be mixed with the timothy hay in order to make the ration conform to the standard; and that something

containing a deficiency of protein, such as corn, should be mixed with the alfalfa in order to increase the proportion of carbohydrates and fats.

On pages 11 and 12 of this pamphlet are found some sample rations. It should be understood that these rations are sufficient for one day's feed for a cow giving a full flow of milk. A study of them and the tables of comparative values of feeds will show that one cannot make up a ration, conforming to the standard, out of timothy hay, corn fodder, oat straw and corn, since all of these common feeds contain too little protein. It will also appear that clover hay will contain more than twice the protein that there is in timothy hay, and that peas and oats have a still large proportion of this valuable and scarce nutrient. The advisability of raising those feeds that contain the largest proportion of protein is apparent.

If mill or by products are purchased, they should be bought on the basis of their protein content, and other things being equal, that one should be purchased which will furnish the protein for the least money per pound of protein.

It will pay the dairy farmer to experiment with fodder crops which, if successful, will give him a supply of protein. Alfalfa will grow in certain localities in western and southwestern Iowa and its protein value is so great that it should be grown wherever possible. Try an acre or two of alfalfa or of peas and oats.

Sorghum for fodder has also been highly recommended. It should be put in with a wheat drill after corn planting, using from 60 to 100 pounds of seed. Should be cut when the seed is in the dough, piled up without attempt at curing and left in the field until it is to be fed. Don't try to cut it nor to stack it, and don't pasture cattle on it, as it sometimes causes bloat. Sorghum fodder has about the same protein as corn stover and is valuable because it is palatable and because of the large amount an acre will produce.

In making up a ration not more than half its weight should be in grain. Bulky fodders need not be weighed but fed in such amounts as the animals will eat. Silage is valuable because it adds succulence to the winter ration. So do roots and to some extent sorghum fodder. The ration should first of all be balanced, that is contain the proper proportion of protein and carbohydrates and fats. Then it should be, if possible, succulent, ample in quantity and fed regularly.

CARE OF MILK AND CREAM.

The quality of Iowa butter could be considerably improved if the quality of the milk and cream delivered to the creamery could be improved.

Milk is never better than when it is first drawn from the cow. All the care and attention that may be given it can only retard the natural process of souring, or prevent the introduction of dirt or bad odors. Under farm conditions, cleanliness and a low temperature are the only means the farmer can use. The separator at the creamery cannot take out the bacteria that make the milk sour quickly or produce bad flavors. There is nothing that the farmer or butter maker can do to make the milk or cream any better, they can simply prevent it from getting any worse, and since the farmer has the first handling of the milk and cream, his responsibility is the greater. The milk must be drawn in a cleanly manner into clean pails, strained into a clean can, set in the tank of water as cold as possible, the can cover left loose, and the milk sent to the creamery as soon as possible.

Don't buy a can that has any seams in it, or if you must do so, have a tinner fill the seams with solder so that there can be no place where cream or sour milk may escape the washing. Use a brush instead of a cloth to wash the cans, and rinse them with boiling water.

A few salesmen of hand separators have assured their purchasers that one or two washings of the separator in a week is sufficient, and that weekly or semi-weekly delivery of cream is all that is necessary. Both statements are equally incorrect. The law provides a penalty for the delivery of "unclean, impure, and unwholesome" milk or cream to a creamery. Such milk is worth less, and brings less when converted into butter, than that which is clean. It will pay to keep the milk and cream in the best possible condition, so that the buttermaker can make the highest grade of butter out of it. The separator must be washed after each time it is used, and the cream should be delivered every day. Warm cream should not be mixed with cold cream.

Patronize a creamery that is near you. Shipping milk or cream long distances lowers the value of the cream for buttermaking. Sell your product to some one that you can deal with in person and then if there is an error of any kind you can compel a proper correction.

RAISING CALVES ON SEPARATOR SKIMMED MILK.

The skimmed milk that comes from a good separator has in it about .05 of one per cent of butter fat, instead of 3.8 per cent of fat contained in average whole milk. Its value is variously estimated at 10 to 40 cents per hundred pounds to feed to calves and young pigs. It is much more valuable sweet than sour, and the farmer should demand that his creamery sterilize the skimmed milk so that it may be kept sweet a longer time. Of course the milk must get to the separator sweet or the heating will curdle it.

The same principles of feeding apply as with the feeds for milk production, the standard being a little different. If the milk as supplied by the cow is the right ration for the calf, then of course skimmed milk must have something added to it that will take the place of the butter fat that has been taken out by the separator. In feeds the fats and the carbohydrates serve the same purpose, hence we may add either carbohydrates or fats to the skimmed milk to bring it into balance. There is nothing better than corn for this purpose. Flax seed meal is also good but corn is much cheaper and is found on every farm in the state, ready to feed to the calf with his skimmed milk.

Feed the calf the first milk from his mother. This colostrum milk is especially provided by nature to set in proper motion the digestive apparatus of the new born calf. Continue to feed him whole milk for two weeks. Give not more than 10 pounds, or 5 quarts, per day, in three feeds. Then gradually substitute skimmed milk for a part of the whole milk, increasing the one and decreasing the other so that at a month old he is getting skimmed milk. Increase the amount of skimmed milk, if desired, so that at three months the calf gets 20 pounds per day.

When the change is made to skimmed milk, teach the calf to eat shelled corn. The calf needs to chew the corn in order to get the saliva into his stomach. If corn meal is put in the milk he will gulp it down without chewing, to the detriment of his digestion.

The heifer calves should not have an excess of corn, if they are to be kept for the dairy. Steer calves and those which it is expected to fatten may have about all the corn they will eat.

Don't feed the calves too much milk.

Don't feed sour milk.

Don't feed the young calves cold milk.

If you neglect these don'ts the digestion of the calf will be in danger, and lack of thrift, scours, and so-called calf cholera will follow.

With sweet skimmed milk, fed in a cleanly manner, with corn to balance the loss of the fat, calves can be raised that will rival those that follow the cow.

VARIATIONS OF MILK TEST.

The Babcock test measures butter fat to one-tenth of a pound in the hundreds pounds of milk, and is just as accurate as an ordinary scale would be in weighing two or three pounds of sugar. A number of the variations in milk tests are uncontrollable. If milk or cream is sour or churned when it arrives at the creamery, a proper sample cannot be taken and an accurate test cannot be made. It will pay the farmer in his test to get his milk to the creamery in good shape.

If the cow is not starved, change of feed or increase in its amount will not change the per cent of butter fat though it may increase the amount of milk and the total of fat. A study of the following tables of comparison of milk tests from dairy authorities will be useful in understanding that the test of milk does vary. Note the small differences between the chemical analyses and the Babcock tests of the same milk. The first milk given by a cow in each milking is nearly all water. If you milk the first half of the milk, and let the calf have the remainder he will get three-fourths the butter fat. In the table showing the variations of a test of a cow's milk in eight successive months, it will be noticed that while the test increased very rapidly near the end of her milking period, yet even in the last month one day's milk fell below the legal minimum of 3.0 per cent, although the average was 7.2 per cent.

The effect of excitement on the test of milk is shown by the last of these tables. Such violent fluctuations of tests results in loss of milk as well as in per cent of butter fat. Hence the value of kind treatment and comfort for the cow. It is right to insist that the creamery give you what your milk really tests, but don't be unreasonable if the test shows only a reasonable variation.

Comparison of chemical analysis and Babcock test of samples.

Analysis.	Babcock.
3.86	3.8
3.47	3.4
5.49	5.5
.94	1.0

Test of first half pint and last half pint of milk from four cows:

First.	Last.
.6	7.2
.2	6.6
1.5	6.8
.8	7.8

Highest and lowest test of one cow's milk in each of the months of her period of lactation, and average monthly test:

High.	Low.	Average.
4.9	3.	4.7
4.6	2.7	4.9
5.8	3.2	4.5
4.7	3.4	4.7
5.8	3.	4.8
4.6	3.4	5.5
6.2	2.8	6.2
7.9	2.9	7.2

Fluctuations of tests of successive milkings of cows affected by excitement of shipping:

1.2	1.5	0.9
1.2	2.0	3.9
3.4	2.4	4.9
10.7	3.8	3.4
4.1	7.2	3.6
6.2	11.1	3.7
3.4	5.3	3.1
	3.9	

RATIONS FOR DAIRY COWS

It must be understood that the values in the following tables and in the rations are only approximate. Feeds all vary in quality. Hays and fodders lose their protein rapidly when exposed to weather. Hence the values given are only averages and other tables may give slightly different values. The judgment of the feeder must enter into every ration. On page 12 is a table in regard to soiling crops.

COMPARATIVE VALUE OF FEED STUFFS FOR DAIRY COWS

Calculations based upon the percentage of digestible protein.

	PERCENTAGE COMPOSITION				COMPARATIVE VALUE PER TON WHEN TIMOTHY IS WORTH—				
	Dry Matter	DIGESTIBLE			\$5.00	\$6.00	\$7.00	\$8.00	\$9.00
		Pro.	C.H.	Fat					
GREEN FODDER.									
Grasses.....	20.00	2.5	10.2	0.5					
Corn fodder.....	20.70	1.0	11.6	.4	1.47	1.76	2.06	2.35	2.65
Oat fodder.....	37.80	2.7	22.7	1.0	3.97	4.76	5.56	6.35	7.15
Red clover.....	28.20	3.1	14.8	.7	4.56	5.47	6.38	7.30	8.21
Corn silage.....	20.9	1.0	11.4	.7	1.47	1.76	2.06	2.35	2.65
HAY AND FODDERS.									
Corn stover.....	59.50	2.0	33.4	.6	2.94	3.52	4.12	4.70	5.30
Corn fodder.....	57.80	2.5	34.6	1.2	3.68	4.41	5.15	5.88	6.62
Sorghum fodder.....	59.70	1.5	37.3	0.4					
HAY FROM—									
Timothy.....	87.68	3.4	43.4	1.3	5.00	6.00	7.00	8.00	9.00
Alfalfa.....	91.60	10.6	37.3	1.4	15.59	18.71	21.83	24.94	28.06
Alsike clover.....	90.30	8.2	41.7	1.4	12.06	14.47	16.88	19.30	21.71
Red clover.....	87.75	7.6	40.0	1.5	11.18	13.41	15.65	17.88	20.12
Millet.....	88.00	3.9	48.5	1.0	5.74	6.88	8.03	9.16	10.32
Orchard grass.....	90.10	4.8	42.0	1.4	7.06	8.47	9.88	11.30	12.71
Prairie, upland.....	87.50	3.5	41.8	1.4	5.15	6.17	7.20	8.23	9.26
Prairie, mixed.....	84.10	3.4	41.5	1.2	5.00	6.00	7.00	8.00	9.00
Red top.....	91.40	4.8	46.8	1.0	7.06	8.47	9.88	11.30	12.71
Sedge grass.....	89.84	3.4	45.3	1.1	5.00	6.00	7.00	8.00	9.00
Soja bean.....	88.70	10.8	38.7	1.5	15.56	18.67	21.78	24.90	28.01
Wheat straw.....	92.59	1.0	38.0	.4	1.47	1.76	2.06	2.35	2.65
Oat straw.....	91.64	1.5	43.4	.5	2.21	2.65	3.09	3.53	3.97
Oat and pea hay.....	89.3	14.3	50.3	1.9					
ROOTS AND TUBERS.									
Potatoes.....	24.55	2.1	20.2		3.09	3.71	4.32	4.94	5.56
Sugar beets.....	15.00	1.5	12.3	1.0	2.21	2.65	3.09	3.53	3.97
Mangels.....	14.00	1.5	9.0	1.0	2.21	2.65	3.09	3.53	3.97
Turnips.....	9.50	.8	6.5	.1	1.18	1.41	1.65	1.88	2.12
Ruga-bagas.....	11.40	.9	7.7	.1	1.33	1.59	1.86	2.12	2.39
Carrots.....	11.40	.8	7.8	.2	1.18	1.41	1.65	1.88	2.12

BY PRODUCTS.											
BRAN	89.50	12.5	42.1	3.8	7.00	8.00	9.00	10.00	11.0	12.00	13.00
Buckwheat shorts.....	88.99	21.1	33.5	5.5	11.82	13.49	15.19	16.88	18.57	20.25	21.94
Cotton seed meal.....	91.86	32.0	20.2	10.0	17.92	20.48	23.04	25.60	28.16	30.72	33.28
Linseed meal.....	90.00	27.6	33.5	7.3	15.46	17.66	19.87	22.08	24.29	26.49	28.70
Gluten meal.....	90.00	24.5	47.0	5.7	13.72	15.68	17.64	19.60	21.56	23.52	25.48
Germ meal.....	93.00	12.3	52.4	6.1	6.89	7.87	8.86	9.84	10.82	11.81	12.79
Brewers' grains (Dried.).....	91.10	14.7	36.6	4.8	8.23	9.41	10.58	11.76	12.94	14.10	15.29
Brewers' grains (Wet.).....	24.30	3.9	9.3	1.4	2.18	2.50	2.81	3.12	3.43	3.74	4.05
Malt sprouts.....	89.80	18.7	43.5	1.2	10.47	11.97	13.46	14.96	16.46	17.95	19.46
Shorts.....	89.50	10.0	55.9	2.3	5.60	6.40	7.20	8.00	8.80	9.60	10.40
MILL PRODUCTS.											
Barley meal.....	88.10	7.4	62.9	2.0	4.14	4.74	5.33	5.92	6.51	7.10	7.70
Corn meal.....	88.00	9.0	67.4	2.8	5.04	5.76	6.48	7.20	7.92	8.64	9.36
Corn and cob meal.....	84.90	6.5	56.3	2.9	3.64	4.16	4.68	5.20	5.72	6.24	6.76
Oat meal.....	92.10	11.5	52.1	5.9	6.44	7.36	8.28	9.20	10.12	11.04	11.96
Pea meal.....	89.50	16.8	51.8	.7	9.41	10.75	12.10	13.44	14.78	16.13	17.47
GRAINS.											
Barley.....	89.10	8.7	65.6	1.6	4.87	5.57	6.26	6.95	7.66	8.34	9.05
Corn.....	87.10	7.9	66.7	4.3	4.42	5.06	5.69	6.32	6.95	7.58	8.22
Flax.....	90.80	20.6	17.1	29.0	11.54	13.18	14.83	16.48	18.13	19.77	21.42
Millet seed.....	87.50	9.0	54.1	2.9	5.04	5.75	6.48	7.20	7.92	8.64	9.36
Oats.....	89.00	9.2	47.3	4.2	5.15	5.89	6.62	7.36	8.10	8.82	9.57
Peas.....	90.16	19.4	59.6	.5	10.86	12.52	13.97	15.52	17.07	18.63	20.18
Rye.....	88.40	9.9	67.6	1.1	5.54	6.34	7.13	7.92	8.71	9.40	10.20
Wheat.....	89.00	11.0	58.6	1.5	6.16	7.04	7.92	8.80	9.68	10.56	11.44
PRICE PER BUSHEL ON ABOVE BASIS					Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
Barley.....					11.7	13.4	15.0	16.6	18.4	20.0	21.7
Corn.....					12.4	14.2	15.9	17.7	19.5	21.3	23.0
Millet seed.....					12.1	13.8	15.6	17.3	19.0	20.7	22.5
Oats.....					8.2	9.4	10.6	11.8	13.0	14.2	15.3
Peas.....					32.6	37.6	41.9	46.6	51.2	55.9	60.5
Rye.....					15.5	17.7	19.9	22.1	24.4	26.6	28.8
Wheat.....					18.5	21.0	23.8	26.4	29.0	31.6	34.3

RATIONS FOR DAIRY COWS

FORMULA	Organic matter	DIGESTIBLE NUTRIENTS			FORMULA	Organic matter	DIGESTIBLE NUTRIENTS		
		Protein	Carbohydrates	Fats			Protein	Carbohydrates	Fats
20 lbs. red clover	15.70	1.30	6.98	.32	40 lbs. silage	10.56	.52	5.60	.28
5 lbs. corn	4.38	.32	3.24	.25	15 lbs. stover	8.93	.26	4.86	.11
5 lbs. bran	4.12	.63	2.21	.15	5 lbs. bran	4.40	.63	1.93	.15
Totals	24.20	2.25	12.43	.72	5 lbs. corn	4.45	.40	3.34	.21
20 lbs. clover hay	16.94	1.36	7.16	.34	1 lb. cotton seed meal	.92	.37	.17	.12
5 lbs. corn	4.45	.40	3.34	.22	Totals	29.26	2.18	15.90	.87
5 lbs. oats	4.45	.46	2.37	.21	30 lbs. silage	7.92	.39	4.20	.21
Totals	25.84	2.22	12.87	.77	10 lbs. hay	8.78	.60	4.32	.15
20 lbs. clover hay	16.94	1.36	7.16	.34	20 lbs. roots	2.28	.16	1.56	.04
8 lbs. corn and cob meal	7.21	.51	5.04	.28	4 lbs. bran	3.52	.50	1.54	.12
1½ lbs. oil meal	1.36	.44	.49	.11	2 lbs. oil meal	1.82	.59	.65	.14
Totals	25.42	2.31	12.69	.73	Totals	24.32	2.24	12.27	.66
20 lbs. clover hay	15.70	1.30	6.98	.32	30 lbs. silage	7.26	.39	4.20	.21
6 lbs. ground corn	5.26	.38	3.89	.30	10 lbs. hay	8.00	.60	3.80	.15
4 pounds bran	3.30	.50	1.76	.12	8 lbs. bran	6.59	1.00	3.53	.23
Totals	24.26	2.18	12.63	.74	2 lbs. middlings	1.69	.24	.94	.05
20 lbs. clover hay	16.94	1.34	7.16	.34	Totals	23.54	2.23	12.47	.65
5 lbs. (corn) chop	4.45	.40	3.33	.22	25 lbs. silage	6.60	.43	3.50	.18
4 lbs. bran	3.52	.50	1.54	.12	10 lbs. clover hay	8.47	.68	3.58	.17
1 lb. oil meal	.91	.29	.33	.07	7 lbs. bran	6.17	.88	2.70	.21
Totals	25.82	2.53	12.36	.75	3 lbs. middlings	2.64	.38	1.59	.10
20 lbs. clover hay	15.70	1.30	6.98	.32	3 lbs. corn	2.67	.24	2.00	.13
4 lbs. bran	3.30	.50	1.76	.12	Totals	26.55	2.61	13.37	.79
4 lbs. ground oats	3.44	.36	1.79	.16	20 lbs. silage	5.28	.26	2.80	.14
Totals	22.44	2.16	10.53	.60	10 lbs. timothy hay	8.68	.28	4.34	.14
15 lbs. clover hay	12.70	1.02	5.36	.26	2 lbs. oat meal	1.82	.23	.95	.14
5 lbs. bran	4.40	.63	1.93	.15	2 lbs. corn meal	1.78	.16	1.33	.09
2 lbs. corn	1.78	.16	1.33	.09	8 lbs. bran	7.05	1.09	3.09	.24
2 lbs. oats	1.78	.18	.94	.08	Totals	24.61	2.00	12.21	.75
1 lb. oil meal	.91	.29	.33	.07	20 lbs. silage	5.28	.26	2.80	.14
10 lbs. stover	5.95	.17	3.24	.07	10 lbs. clover hay	8.47	.68	3.58	.17
Totals	27.52	2.45	13.13	.72	4 lbs. bran	3.52	.50	1.54	.12
15 lbs. clover hay	12.70	1.02	5.37	.26	4 lbs. gluten feed	3.69	.81	1.94	.12
6 lbs. corn stover	3.57	.10	1.94	.04	2 lbs. corn meal	1.78	.16	1.33	.09
6 lbs. bran	5.29	.75	2.32	.18	Totals	22.74	2.41	11.19	.64
4 lbs. corn and cob meal	3.40	.32	3.15	.18	20 lbs. silage	3.28	.26	2.80	.14
Total	25.96	2.19	12.79	.66	10 lbs. timothy hay	8.68	.28	4.34	.14
12 lbs. clover hay	10.16	.82	4.30	.20	2 lbs. oil meal	1.82	.59	.65	.14
10 lbs. corn stover	5.95	.17	3.24	.07	2 lbs. corn meal	1.78	.16	1.33	.09
5 lbs. bran	4.41	.63	1.93	.15	3 lbs. bran	2.64	.38	1.16	.24
2 lbs. corn	1.78	.16	1.33	.09	3 lbs. gluten food	2.77	.61	2.45	.15
2 lbs. oats	1.78	.18	.95	.08	Totals	22.87	2.28	11.73	.90
1 lb. barley	.89	.09	.66	.02	12 lbs. prairie hay	10.50	.42	5.02	.17
1 lb. oil meal	.90	.28	.33	.07	10 lbs. bran	8.81	1.26	3.86	.30
Total	25.88	2.33	11.74	.68	4 lbs. corn	3.56	.32	2.67	.17
10 lbs. clover hay	7.85	.65	3.49	.16	2 lbs. oil meal	1.82	.59	.65	.14
10 lbs. corn fodder	6.68	.37	4.04	.12	Totals	24.69	2.59	12.20	.78
6 lbs. bran	4.94	.75	2.65	.17	17 lbs. timothy hay	14.76	.48	7.48	.24
4 lbs. corn	3.50	.25	2.59	.20	5 lbs. rye bran	4.42	.58	2.52	.10
1 lb. oil meal	.85	.28	.33	.07	4 lbs. buckwheat middlings	3.49	.88	1.34	.21
Totals	23.82	2.30	13.10	.72	1 lb. oil meal	.91	.29	.33	.07
					Totals	23.58	2.23	11.67	.62

RATIONS FOR DAIRY COW—CONTINUED.

FORMULA	Dry matter	DIGESTIBLE NUTRIENTS			FORMULA	Dry matter	DIGESTIBLE NUTRIENTS		
		Protein	Carbohydrates	Fat			Protein	Carbohydrates	Fat
15 lbs. timothy hay.....	12.36	.45	6.59	.18	12 lbs. mixed hay.....	10.30	.58	4.75	.19
9 lbs. oats.....	7.74	.82	4.02	.36	10 lbs. corn stover.....	5.95	.17	3.24	.07
6 lbs. bran.....	4.94	.75	2.65	.17	4 lbs. ground corn.....	3.56	.32	2.67	.17
½ lb. oil meal.....	.43	.14	.16	.04	4 lbs. bran.....	3.52	.50	1.54	.12
Totals.....	25.47	2.16	13.41	.75	1 lb. oil meal.....	.91	.29	.33	.07
15 lbs. prairie hay.....	13.13	.53	6.27	.21	Totals.....	24.24	1.86	12.53	.62
10 lbs. bran.....	8.81	1.26	3.86	.30	12 lbs. prairie hay.....	9.76	.42	5.02	.17
2 lbs. oil meal.....	1.82	.59	.65	.14	10 lbs. corn stover.....	5.65	.20	3.34	.06
Totals.....	23.76	2.38	10.78	.65	10 lbs. bran.....	8.24	1.26	4.41	.29
12 lbs. timothy hay.....	10.42	.34	5.21	.17	1 lb. oil meal.....	.91	.29	.33	.07
10 lbs. corn stover.....	5.95	.17	3.24	.07	Totals.....	24.56	2.17	13.10	.59
5 lbs. bran.....	4.40	.63	1.93	.15	25 lbs. corn stover.....	14.90	.43	8.10	.18
4 lbs. gluten feed.....	3.69	.82	1.94	.20	10 lbs. bran.....	8.81	1.26	3.86	.30
1 lb. oil meal.....	.91	.29	.33	.07	2 lbs. oil meal.....	1.82	.59	.65	.14
Totals.....	25.37	2.25	12.65	.66	Totals.....	25.53	2.28	12.61	.62
12 lbs. timothy hay.....	9.89	.36	5.27	.14	20 lbs. corn stover.....	11.80	.34	6.48	.14
10 lbs. corn stover.....	5.65	.20	3.34	.06	30 lbs. beets.....	4.05	.33	3.06	.03
4 lbs. cob meal.....	3.34	.26	2.25	.12	4 lbs. corn.....	3.56	.32	2.67	.17
4 lbs. bran.....	3.30	.50	1.76	.12	6 lbs. buckwheat middlings.....	5.24	1.32	2.00	.32
2 lbs. middlings.....	1.69	.25	.94	.08	Totals.....	24.75	2.31	14.21	.66
2 lbs. oil meal.....	1.70	.57	.66	.14	10 lbs. millet hay.....	8.63	.45	4.64	.10
Totals.....	25.57	2.14	14.26	.66	10 lbs. prairie hay.....	8.13	.35	4.18	.14
10 lbs. oat hay.....	9.11	.43	4.64	.15	8 lbs. bran.....	6.59	1.00	3.53	.23
10 lbs. corn stover.....	5.95	.17	3.24	.07	4 lbs. oats.....	3.44	.36	1.79	.16
4 lbs. ground corn.....	3.56	.32	2.67	.17	Totals.....	26.79	2.16	14.14	.63
4 lbs. bran.....	3.52	.50	1.54	.12	15 lbs. oat straw.....	12.85	.24	6.21	.10
2 lbs. oil meal.....	1.82	.59	.35	.14	10 lbs. bran.....	8.24	1.26	4.41	.29
Totals.....	23.06	2.01	12.44	.65	5 lbs. oats.....	4.30	.46	2.24	.22
					Totals.....	25.39	1.96	12.86	.61

CROPS AND AREAS FOR SAME, FOR SOILING TEN COWS DURING THE ENTIRE SUMMER*

CROP	SEED PER ACRE	TIME OF SEEDING	AREA	TIME OF CUTTING
Rye.....	2 bushels.....	Sept. 10-15.....	¼ acre.....	May 20—May 30.
Wheat.....	2 bushels.....	Sept. 10-15.....	¼ acre.....	June 1—June 15.
Red clover.....	20 pounds.....	July 15—Aug. 1.....	¼ acre.....	June 15—June 30.
Grass and clover.....	½ bu. red top.....	September.....	¼ acre.....	June 15—June 30.
	½ bu. timothy.....			
	10 lbs. red clover.....	April 20.....	¼ acre.....	June 25—July 10.
Vetch and oats.....	3 bu. oats.....			
	50 lbs. vetch.....	April 30.....	¼ acre.....	July 10—July 20.
Vetch.....	50 lbs. vetch.....	April 20.....	¼ acre.....	June 25—July 10.
Peas and oats.....	½ bu. Canada.....			
	½ bu. oats.....	April 30.....	¼ acre.....	July 10—July 25.
Peas and oats.....	½ bu. Canada.....			
	½ bu. oats.....	May 10.....	¼ acre.....	July 25—Aug. 20.
Barnyard millet.....	1 peck.....	May 25.....	¼ acre.....	Aug. 10—Aug. 20.
Barnyard millet.....	1 peck.....	May 10.....	¼ acre.....	Aug. 25—Sept. 15.
Soja bean.....	18 quarts.....	May 20.....	¼ acre.....	Aug. 25—Sept. 10.
Corn.....	.....	May 30.....	¼ acre.....	Sept. 10—Sept. 20.
Corn.....	.....	July 15.....	¼ acre.....	Sept. 20—Sept. 30.
Hungarian.....	1 bushel.....	August 5.....	1 acre.....	Oct. 1—Oct. 20.
Barley and peas.....	1½ bu. each.....			

*Hatch Experiment Station, Massachusetts.

DAIRY LAWS OF IOWA.

CHAPTER 13.

OF THE DAIRY COMMISSIONER AND IMITATION BUTTER PRODUCTS.

SECTION 2515. *Appointment—bond—powers and duties of commissioner—report.*—On or before the first day of April of each even numbered year, the governor shall appoint a dairy commissioner, who shall have a practical knowledge of and experience in the manufacture of dairy products, and hold his office for two years from the first day of May following his appointment, and until his successor is appointed and qualified, subject to removal by the governor for inefficiency, neglect or violation of duty. He shall give bond in the sum of \$10,000, conditioned for the faithful performance of his duties, with sureties to be approved by and filed with the secretary of state. He shall keep on hand a supply of standard test tubes or bottles and milk measures or pipettes adapted for use by each milk testing machine, the manufactures or dealers of which have filed with the dairy commissioner a certificate from the director of the Iowa agricultural experiment station, which shall certify that said milk testing machine, when properly and correctly operated, will produce accurate measurements of butter fat, and furnish to any person or corporation desiring the same for testing milk one such tube or bottle, and such milk measure or milk pipette for each factory, of the kind adapted for the machine operated therein, upon request therefor, certifying it to be reliable, accurate and standard, placing thereon the letters "D. C." as a permanent mark; the tubes or bottles and pipettes to be furnished at the actual cost thereof. He shall have and keep an office in the capital, and preserve therein all correspondence, documents, records, and property of the state pertaining thereto, and may when necessary employ an office deputy at a salary of ten hundred dollars per year; the dairy commissioner may also appoint, upon the recommendation of the Iowa State College of agriculture and mechanic arts, the director of the Iowa experiment station and the professor of dairying, one assistant who shall perform such duties as may be assigned to him by the dairy commissioner, and who shall receive a salary of ten hundred dollars per year, and said deputy and assistant of the dairy commissioner shall be allowed in addition to their salaries, actual and necessary traveling expenses, when in the performance of their official duties, said expenses to be itemized, verified under oath, and when audited and approved by the executive council to be paid upon warrant of the state auditor upon the state treasurer, provided that such expenditure shall not exceed the appropriation made for the dairy commissioner's office. During his term of office he shall hold no other official position nor any professorship in any state educational institution, and on or before the first day of November shall make annual report to the governor, which shall contain a detailed account of all his doings as commissioner and the receipts and disbursements of his office since the preceding report, with such facts and statistics in regard to the production, manufacture and sale of dairy products, with such suggestions as he may regard of public importance in connection therewith. In the conduct of his office, he shall have power to issue subpoenas for witnesses, enforce their attendance, and examine them under oath by him to be administered, such witnesses to be allowed fees as in justices' courts, to be paid by the commissioner as part of the expenses of his office, and do such other acts and things as are necessary and proper in the enforcement of the provisions of this chapter.

SECTION 2516. *Imitation butter or cheese.*—Every article, substitute or compound, save that produced from pure milk or cream from milk of cows, made in the semblance of or designed to be used for and in the place of butter, is imitation butter; and every article, substitute or compound, save that produced from pure milk or cream from milk of cows, made in the semblance of or designed to be used for and in the place of cheese, is imitation cheese. No one shall manufacture, have in his possession, or offer to sell, solicit or take orders for delivery, ship, consign or forward by any common carrier, public or private, and no common carrier shall knowingly receive or transport any imitation butter or cheese, except in the manner and subject to the regulations in this chapter provided.

SECTION 2517. *Substitute for butter or cheese—regulations as to sale and use—transportation.*—A substitute for butter and cheese, not having a yellow color nor colored in imitation of butter and cheese as prohibited in the next section, may be manufactured, kept in possession, offered for sale, sold, shipped, consigned or forwarded by common carrier, public or private, if each tub, firkin, box or other package in which the same is kept, offered for sale, sold, shipped, consigned or forwarded shall have branded, stamped or marked on the side or top thereof in the English language, in a durable manner, the words "Substitute for butter" or "Substitute for cheese," as the case may be, the letters of the words to be not less than one inch in length by one-half inch in width. The defacing, erasure, canceling or removal of this brand or mark, with intent to mislead, deceive, or violate any provision of this chapter, is prohibited. Such substitute for butter or cheese may be kept, used or served as food or for cooking in hotels, restaurants, lunch counters, or other places of public entertainment, only in case the proprietor or person in charge of such place shall display and keep constantly posted a card opposite each table or other place where the guests or others are served with the same, which card shall be white, at least ten by fourteen inches in size, the words, "Substitute for butter used here" or "Substitute for cheese used here," as the case may be, printed in black Roman letters of the same size as herein required to be placed upon the tubs, firkins, boxes or other package in which substitute for butter or cheese is kept, and no other words or figures shall be printed thereon. No substitute for butter or cheese shall be offered for sale in the manufacturer's original package under the name of or for true butter or cheese made from the milk or cream of cows, nor shall any substitute for butter or cheese be offered for sale or sold unless the purchaser at the time was informed thereof, and, in addition furnished with a printed statement in the English language in prominent type that the substance sold is such substitute, and giving the name and place of business of the maker. Nothing herein contained, however, shall be so construed as to prohibit the transportation of imitation butter or cheese through and across the state.

SECTION 2518. *Coloring—adulteration.*—No one shall color with any matter whatever any substance intended as a substitute for butter or cheese, so as to cause it to resemble true dairy products, or combine any animal fat, vegetable oil or other substance with butter or cheese, or combine with any substance whatever, intended as a substitute for butter or cheese, any thing of any kind or nature for the purpose of or with the effect of imparting to the compound the color of yellow butter or cheese, the product of the milk or cream from cows, or use, solicit orders for delivery, keep for sale or sell any such substance so colored and disguised as a substitute for butter or cheese; but nothing in this chapter shall be construed to prohibit the use of salt, rennet, or harmless coloring matter in making the butter or cheese from such milk or cream.

SECTION 2519. *Package branded.*—No one shall have in his possession or under his control, except for the actual consumption of himself or family, any substance designed as a substitute for butter or cheese,

unless the tub, firkin, box or package holding the same is branded or marked as in this chapter required. Any person having in his possession or under his control such substance, not so branded or marked, shall be presumed to know its true character and name.

SECTION 2520. *Contracts invalid.*—No action shall be maintained in any of the courts of the state upon any contract or sale made in violation of or with the intent to violate any provision of this chapter by one who was knowingly a party thereto.

SECTION 2521. *Search warrants—samples.*—Whoever shall have in possession or control any imitation butter or cheese or any substance designed to be used as a substitute for butter or cheese contrary to the provisions of this chapter, shall be held to have possession of property with intent to use it as a means of committing a public offense, and all the provisions of the chapter relating to search warrants and proceedings thereon shall apply, except the officer serving the warrant, in addition to his duties therein required, shall deliver to the dairy commissioner, or to a person by him authorized in writing, to receive the same, a perfect sample of each article seized by virtue of such warrant, for the purpose of having the same analyzed, and forthwith return to the person from whom it was taken the remainder of each article seized. If any sample is found to be imitation butter or cheese, or substance designed to be used as a substitute for butter or cheese, it shall be returned to and retained by the magistrate for the purposes contemplated in said chapter on "search warrants and proceedings thereon," but if any sample be found not imitation butter or cheese, or a substance designed to be used as a substitute therefor, the value of the same shall be paid by the dairy commissioner as a part of the expenses of his office, to the person from whom it was taken.

SECTION 2522. *Milk dealers—manufacturers and packers—reports.*—Every city milk dealer, or every person furnishing milk or cream to such dealer, or the employe of such milk dealer, and, every person or corporation, or the employe of such person or corporation, who operates a creamery, cheese or condensed milk factory, or re-works or packs butter, shall maintain his premises and utensils in a clean and hygienic condition, and shall make, upon blanks furnished by the dairy commissioner, such reports and statistics as may be required for the purpose of compiling statistics authorized by this chapter, and such dealer, owner, operator, or business manager shall make such returns and reports within thirty days after receiving the proper blank form from the dairy commissioner and shall certify to the correctness thereof. Whoever shall violate any provision of this section shall be punished by a fine of not less than twenty-five nor more than one hundred dollars, or by imprisonment in the county jail for not more than thirty days.

SECTION 2523. *Milk test.*—Any person or corporation, or the employe of such person or corporation, who operates a creamery or cheese or condensed milk factory, and uses a chemical test to determine the quantity of butter fat in milk purchased, used or received, shall so use only such tests as shall be clear oil, free from any foreign substance, and produce correct measurements of butter fat, and every such person or person using a milk test shall procure from the dairy commissioner for each factory so operated one standard tube or bottle, and one standard measure or pipette, for testing milk, certified and marked by him as in this chapter provided, which shall be kept for inspection by the patrons, and used by such person or corporation in testing or verifying test tubes or bottles and milk measures or pipettes used. In any action arising between such operator and patron, the burden of establishing the use of reliable tests and the results therefrom, equivalent to the standard herein provided, shall be upon the operator.

SECTION 2524. *Samples collected.*—The commissioner may appoint agents in any city having over 10,000 inhabitants to collect from each dealer, not more than four times each month, samples of milk offered for sale therein. The agent shall make an accurate test of each sample

received by him, and keep a true record thereof, with the name and location of the person from whom it was obtained, and report his work in detail to the commissioner, the compensation therefor not to exceed three dollars for each day actually employed therein.

SECTION 2525. *Permits.*—Any person or corporation who shall sell milk or cream from a wagon, depot or store, or sell or deliver milk or cream to a hotel or restaurant or boarding house, or any public place in any such city, shall be considered a city milk dealer. No such city milk dealer shall sell milk or cream from a wagon, depot, or store in any such city without a written permit from the commissioner for each wagon, depot or store operated by him, for which he shall annually pay one dollar. A permit shall expire on the fourth day of July of each year, and no permit shall be issued for less than one dollar.

SECTION 2526. *Inspection.*—He or his agent may open any can or vessel containing milk or cream offered for sale in such city, and inspect the contents and take samples therefrom for testing and analysis. And any city milk dealer or employe of such milk dealer, or any other person who shall resist or interfere with the commissioner or his agent in the performance of his duties in executing any of the requirements of this chapter, shall be guilty of a misdemeanor and punished as provided in this chapter.

SECTION 2527. *Penalties.*—Whoever shall violate any provision of this chapter shall be punished by a fine not exceeding five hundred dollars, or by imprisonment in the county jail not exceeding six months, or by both such fine and imprisonment at the discretion of the court.

SECTION 2528. *Compensation—expenses.*—The commissioner shall be allowed necessary postage, stationery and office supplies, and shall receive an annual salary of fifteen hundred dollars and necessary expenses, which shall not exceed three thousand dollars per year; such expenses to be itemized, verified by him, and, when examined and approved by the executive council, to be paid upon a warrant of the state auditor drawn upon the state treasurer. The salary of the clerk shall be paid in the same manner.

FROM CHAPTER 10, TITLE 24, CODE.

SECTION 4989. *Sale of impure or skimmed milk—skimmed milk cheese—labeling.*—If any person shall sell, exchange, or expose for sale or exchange or deliver or bring to another, for domestic or potable use, or to be converted into any product of human food, any unclean, impure, unhealthy, adulterated, unwholesome or skimmed milk, or milk from which has been held back what is commonly known as strippings, or milk taken from an animal having disease, sickness, ulcers, abscess or running sore, or which has been taken from the animal within fifteen days before or five days after parturition; or if any person, having cows for the purpose of producing milk or cream for sale, shall stable them in an unhealthy place or in crowded manner, or shall knowingly feed them food which produces impure, unwholesome milk, or shall feed them distilled glucose or brewery waste in any state of fermentation, or upon any substance in a state of putrefaction or rottenness or of an unhealthy nature, or shall sell or offer for sale, as cream, an article, which shall contain less than the amount of butter fat as prescribed in this chapter; or if any person shall sell or offer for sale any cheese manufactured from skimmed milk, or from milk that is partially skimmed, without the same being plainly branded, stamped or marked on the side or top of both cheese and package, in a durable manner, in the English language, the words "skimmed milk cheese," the letters of the words to be not less than one inch in height and one-half inch in width, he shall be fined not less than twenty-five nor more than one hundred dollars, and be liable for double damages to the person or persons upon whom such frauds shall be committed; but the provisions of this section shall not apply to skimmed milk when sold as such and in the manner and subject to the regulations prescribed in this chapter.

SECTION 4990. What deemed adulterated or impure milk.—For the purposes of this chapter, the addition of water or any other substance or thing to whole milk or skimmed milk or partially skimmed milk is hereby declared an adulteration, and milk which is obtained from animals fed upon waste as defined in this chapter, or upon any substance of an unhealthy nature, is hereby declared to be impure and unwholesome and milk which is proved by any reliable method of test or analysis to contain less than twelve and one-half per cent. of milk solids to the hundred pounds of milk, or less than three pounds of butter fat to one hundred pounds of milk, shall be regarded as skimmed or partially skimmed milk, and every article not containing fifteen or more per cent. of butter fat shall not be regarded as cream.

SECTION 4991. Enforcement.—It is hereby made the duty of the dairy commissioner to enforce the provisions of the two preceding sections

CITY MILK INSPECTION.

The expense of the milk inspection in the fourteen cities of the state having more than 10,000 population during the year ending November 1, 1902, has been \$2,259.10, which is more than all the other expense of the dairy commissioner's office, not including salaries.

The growth of city milk inspection in this state is indicated by the following table showing the number of permits for milk dealers issued in the years from 1894 to 1902. The years end in every case on the 4th of July:

1894	1895	1896	1897	1898	1899	1900	1901	1902
359	491	566	620	574	676	714	784	821

The number of permits issued since July 4, 1902, is 674.

The milk inspection carried on under the direction of this department affects about one-seventh of the population of the state, as will be seen by the following table:

CITIES.	POPULATION	INSPECTOR.
Burlington	23,201	Dr. W. C. Hummell.
Cedar Rapids	25,656	Dr. J. W. Griffith.
Clinton	22,698	F. E. Bills.
Council Bluffs	25,802	W. A. Groneweg.
Davenport	35,254	H. J. High.
Des Moines	62,139	C. H. McCoraughy.
Dubuque	36,297	Dr. B. Michel.
Fort Dodge	12,162	D. C. Benjamin.
Keokuk	14,641	A. A. Bland.
Marshalltown	11,544	Dr. E. M. Singleton.
Muscatine	14,073	Dr. John Tillie.
Ottumwa	18,197	E. B. Hill.
Sioux City	33,111	O. P. McCray.
Waterloo	12,580	Theo. Peek.
Total.	347,355	

About one-fourth of all the milk dealers in these fourteen cities are found in the city of Des Moines, and the inspection in Des Moines is closer and more effective in its results than it is in the other cities. Complaints are continually received that dealers are using preservatives in the warm weather, but scarcely any complaints of other adulterations of milk are received. It is not believed that the use of preservatives is at all general among milk men, and only one prosecution for the use of preservatives has been made during the last year. The inspection of milk is in the hands of honest and competent agents of this office and their work is highly appreciated, both by the dealers and the citizens of their respective cities.

CREAMERY LIST.

List of creameries in the state, alphabetically arranged according to counties and towns near which creameries are located, together with information pertaining to each.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of receiving milk.
<i>Adair County.</i>								
1	Adair	Adair Co-op. Creamery	Co-op	W. Swart, Sec.	Adair	Roy Furst	Separator	Test.
2	Arbor Hill	Arbor Hill Co-op. Creamery	Co-op	A. H. Wambold, Sec.	Arbor Hill	R. J. Erb	Separator	Test.
3	Fontanelle	Blue Grass Creamery (s)	Ind	A. L. Stewart, Cal Shamon Sec	Fontanelle	W. F. Stewart	Separator	Test.
4	Carby	Blue Grass Creamery (s)	Ind	A. L. Stewart			Separator	Test.
5	Flak	Blue Grass Creamery (s)	Ind	A. L. Stewart			Separator	Test.
6	Greenfield	Blue Grass Creamery (s)	Ind	A. L. Stewart, Mgr	Greenfield	Albert Heyn	Separator	Test.
7	Prussia	Blue Grass Creamery (s)	Ind	A. L. Stewart, Mgr	Greenfield		Separator	Test.
8	Greenfield	Greenfield Creamery	Stock	Jas. F. Laude	Greenfield		Separator	Test.
9	Howe	Home Co-op. Creamery Co.	Co-op	H. L. Hackthorn, Sec	Stuart	F. S. Odell	Separator	Test.
10	Orient	Elgin Creamery Co. (s)	Stock	O. Sanda	Chicago, Ills.	Myron J. Webster	Separator	Test.
11	Bridgewater	Blue Grass Creamery	Ind	A. L. Stewart, Mgr	Greenfield	M. N. Bates	Separator	Test.
12	Berwa	Blue Grass Creamery (s)	Ind	A. L. Stewart, Mgr	Greenfield		Separator	Test.
13	Hebron	Hebron Creamery	Ind	D. F. Hammers	Hebron	D. F. Hammers	Separator	Test.
<i>Adams County.</i>								
14	Corning	Elgin Creamery Co.	Stock	O. Sanda, Chicago.	Chicago	J. E. Anderson	Separator	Test.
15	Carbon	Elgin Creamery Co. (s)	Stock	O. Sanda, Chicago.	Chicago		Separator	Test.
16	Carl	Elgin Creamery Co. (s)	Stock	O. Sanda, Chicago.	Chicago		Separator	Test.
17	Mercer	Elgin Creamery Co. (s)	Stock	O. Sanda, Chicago.	Chicago		Separator	Test.
18	Prescott	Prescott Butter & Cheese Ass'n	Co-op	Frank Brandt, Sec	Prescott	Chas. E. Chawgo	Separator	Test.
19	Williamson	Prescott Butter & Cheese Ass'n (s)	Co-op	Frank Brandt, Sec	Prescott		Separator	Test.
<i>Attamakee County.</i>								
20	Dorchester	Dorchester Creamery Co.	Stock	L. Copper-Smith	Dorchester	Ben W. Schulte	G. C	Test.
21	Lansing	Calhoun Creamery Co.	Co-op	J. Leppert	Church	K. V. Ferris	G. C	Test.
22	Postville	Postville Farmers' Co-op. Cr'y Co	Co-op	F. H. Welzel	Postville	Jas. A. Gordon	Separator	Test.
23	Waterville	Farmers' Co-op. Cr'y & Com. Co.	Co-op	Adolph Askeon	Waterville	Martin Frok	G. C	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of receiving milk.
24	Waukon	Farmer's Waukon Co-op. Cr'y Co.	Co-op.	S. H. Oppen	Waukon	D. B. Oleson	S. & G. C. Separator.	L. & T. Test.
25	Waukon	Ludlow Co-op. Creamery Co.	Co-op.	F. C. Launderman	Waukon	W. P. Much	Separator.	Test.
26	Quandahl. . .	Arctic Spring Creamery	Ind.	I. D. Johnson	Quandahl. . .	Alburn Edgington	G. C. . .	Test.
<i>Audubon County.</i>								
27	Audubon	Sharon Separator Creamery Co.	Co-op.	W. Knudsen, Manager.	Audubon, R. D. No. 4.	W. Knudsen	Separator.	Test.
28	Brayton	Oakfield Twp. Separator Cr'y Co.	Co-op.	Jesse Nymand	Brayton	J. P. Nielson	Separator.	Test.
29	Brayton	Troublesome Valley Cr'y Co.	Co-op.	J. C. Hardman	Brayton	H. A. Sherk	Separator.	Test.
30	Extra	Audubon Twp. Separator Cr'y Co.	Co-op.	P. Jensen	Extra	F. Jensen	Separator.	Test.
31	Extra	West Hamlin Separator Cr'y Co.	Co-op.	John Nielson	Extra	John Nielson	Separator.	Test.
32	Gray	Gray Creamery Co.	Co-op.	John's Groteluschen	Gray	W. J. Lancelot	Separator.	Test.
33	Hamlin	Blue Grass Separator Creamery.	Co-op.	I. Z. Moore	Hamlin	Fred Heileman	Separator.	Test.
34	Kimballton	Danish Separator Creamery Co.	Co-op.	Peter Lykke	Audubon, R. D. No. 4.	A. P. Rasmussen	Separator.	Test.
35	Ross	Ross Creamery Co.	Co-op.	H. W. Stearna	Audubon.	B. Jensen	Separator.	Test.
36	Manning	Liberty Creamery Co.	Co-op.	Peter Witterup	Audubon.	C. S. Christensen	Separator.	Test.
37	Extra	Elgin Creamery Co.(s)	Ind.	O. Sands	Chicago, Ill.	.....	Separator.	Test.
<i>Benton County.</i>								
38	Van Horne	Van Horne Creamery (s)	Ind.	H. O. Dauchy, Mgr.	Van Horne .....	.....	Separator.	Test.
39	Blairtown	Le Roy Creamery	Co-op.	T. H. Well, Sec.	Blairtown.	L. R. Haas	Separator.	Test.
40	Blairtown	Kedzie Creamery	Ind.	J. A. Duncalf	Blairtown.	J. A. Duncalf	Separator.	Test.
41	Blairtown	Mc. Auburn Creamery	Ind.	A. M. Rowe	Blairtown.	Tomer Barber	Separator.	Test.
42	Ureana	Ureana Co-operative Cr'y Co.	Co-op.	F. C. Nielson	Ureana	M. Briggs	Separator.	Test.
43	Vinton	Ureana Co-operative Creamery Co.	Ind.	Chas. A. A. Dodge	Ureana	C. H. Underham	Separator.	Test.
44	Vinton	Ureana Co-operative Creamery Co.	Ind.	Chas. A. A. Dodge	Ureana	H. V. Bassett	Separator.	Test.
45	Gillespie	Star Creamery	Ind.	C. B. Gringrich	Gillespie	J. C. Erhard	Separator.	Test.
46	Gillespie	La Porte Co-op. Creamery Co. (s)	Ind.	C. B. Gringrich	La Porte City .....	.....	Separator.	Test.
47	Walford	Gedlar Valley Creamery (s)	Stock.	Fred Walker	Gedlar Rapids	W. R. Carroll	Separator.	Test.
48	Shellsburg	Shellsburg Creamery	Ind.	Harshy & McKay	Shellsburg	M. B. Horsley	Separator.	Test.
49	Norway	Norway Creamery	Ind.	H. O. Dauchy, Mgr.	Norway	H. O. Dauchy	Separator.	Test.
50	Van Horne	Van Horne Creamery	Ind.	H. O. Dauchy, Mgr.	Van Horne .....	.....	Separator.	Test.

Black Hawk County.

51	Waterloo.....	Palmer-Hubbard Co.....	Stock.....	Independence.....	C. P. Jacobsen.....	G. C. S. & G. C. Test.
52	Benson.....	W. B. Smith.....	Co-op.....	Benson.....	John Souto.....	S. & G. C. Test.
53	Cedar Falls.....	W. B. Smith.....	Ind.....	Cedar Falls.....	W. M. Souto.....	Separator. Hd.
54	Crain Creek.....	A. B. Smith.....	Ind.....	Crain Creek.....	W. M. Souto.....	S. & G. C. Test.
55	Dewar.....	A. B. Smith.....	Co-op.....	Dewar.....	H. M. Crocker.....	Separator.
56	Dunkerton.....	A. B. Smith.....	Co-op.....	Dunkerton.....	H. M. Crocker.....	Separator.
57	East Center.....	A. B. Smith.....	Co-op.....	East Center.....	H. M. Crocker.....	Separator.
58	Fairbank.....	A. B. Smith.....	Stock.....	Fairbank.....	Oscar Harvey.....	Separator. Test.
59	Gilbertville.....	A. B. Smith.....	Co-op.....	Gilbertville.....	C. E. Brant.....	Separator. Test.
60	Hudson.....	A. B. Smith.....	Co-op.....	Hudson.....	O. K. Mott.....	Separator. Test.
61	Janesville.....	A. B. Smith.....	Co-op.....	Janesville.....	Wm. Cornell.....	Separator. Test.
62	Jubilee.....	A. B. Smith.....	Co-op.....	Jubilee.....	Wm. F. Hamel.....	Separator. Test.
63	La Porte.....	A. B. Smith.....	Co-op.....	La Porte.....	Geo. F. Purdie.....	Separator. Test.
64	Voorhies.....	A. B. Smith.....	Co-op.....	Voorhies.....	A. J. Freese.....	Separator. Test.
65	Waterloo.....	A. B. Smith.....	Co-op.....	Waterloo.....	Bryon Lemus.....	S. & G. C. Test.
66	Waterloo.....	A. B. Smith.....	Co-op.....	Waterloo.....	Geo. Jensen.....	S. & G. C. Test.
67	Waterloo.....	A. B. Smith.....	Co-op.....	Waterloo.....	E. S. Gronse.....	Separator. Test.
68	Waterloo.....	A. B. Smith.....	Co-op.....	Waterloo.....	H. O. Moxdorf.....	Separator. Test.
69	Waterloo.....	A. B. Smith.....	Co-op.....	Waterloo.....	R. W. Chadwick.....	Separator. Test.
70	Waterloo.....	A. B. Smith.....	Co-op.....	Waterloo.....	F. Nightman.....	Separator. Test.
Boone County.						
71	Berkeley.....	Red Star (s).....	Ind.....	Perry.....	.....	Separator. Test.
72	Boone.....	Seonke Bros. Creamery.....	Ind.....	Boone.....	Geo. F. Soenke.....	Separator. Test.
73	Madrid.....	Madrid Creamery (s).....	Ind.....	Madrid.....	F. Symonds.....	Separator. Test.
74	Boston.....	Woodward Creamery (s).....	Ind.....	Woodward.....	S. & G. C. Test.	Separator. Test.
75	Boxholm.....	Boxholm Co-op. Creamery.....	Co-op.....	Boxholm.....	Peter Lingman.....	S. & G. C. Test.
76	Rosendale.....	Rosendale Co-op. Creamery Co.....	Co-op.....	Stanhope.....	L. C. Peterson.....	Separator. Test.
77	Boxholm.....	Renner Creamery.....	Ind.....	Ogden R. F. D. No. 2.....	Joseph Michels.....	Separator. Test.
Bremer County.						
78	Bremer.....	Bremer Creamery Co.....	Co-op.....	Bremer.....	Wm. Kallenbeck.....	Separator. Test.
79	Bremer.....	Western Douglas Creamery Co.....	Co-op.....	Waverly Route No. 1.....	Frank Finch.....	Separator. Test.
80	Sumner.....	Little Valley Creamery Co.....	Co-op.....	Buck Creek.....	F. M. Zell.....	Separator. Hd.
81	Denver.....	The Farrington Creamery Co.....	Co-op.....	Cedar Falls.....	.....	Separator. Hd.
82	Denver.....	First Maxwell Creamery Co.....	Co-op.....	Route No. 1.....	B. P. Squires.....	Separator. Hd.
83	Frederika.....	Frederika Creamery Ass'n.....	Co-op.....	Denver.....	John Wedemeyer.....	Separator. Hd.
84	Grovehill.....	Grovehill Creamery.....	Co-op.....	Frederika.....	Cecil E. Carr.....	Separator. Hd.
85	Klinger.....	Klinger Creamery.....	Ind.....	Grovehill.....	F. D. Daniels.....	Separator. Hd.
86	Knitel.....	Maxfield Creamery Co.....	Co-op.....	Klinger.....	C. H. Diekmann.....	Separator. Hd.
87	Sumner.....	Climax Creamery Co.....	Co-op.....	Knitell.....	F. Wills.....	Separator. Hd.
				Sumner.....	Fred Engel.....	Separator. Hd.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of receiving milk.
88	Sumner	Excelsior Creamery Co.	Co-op	H. E. Watke	Sumner	F. G. Huntley	Separator.	Test.
89	Sumner	Spring Fountain Creamery Co.	Co-op	Joe Volker	Sumner	Fred Sumner	Separator.	Hd.
90	Sumner	Sumner Creamery Co.	Co-op	John Dawson	Sumner	Robt. Mallie	Separator.	Hd.
91	Tripoli	Premont Creamery Co.	Co-op	H. F. Braun	Tripoli	John E. Smith	Separator.	Hd.
92	Tripoli	Potter's Siding Creamery Co.	Co-op	H. C. Lehmann, Sec.	Tripoli	H. C. Ledge	Separator.	Hd.
93	Tripoli	Tripoli Creamery Co.	Co-op	A. C. Esenhardt, Sec.	Tripoli	F. C. Oltrogge	Separator.	Hd.
94	Denver	Artisan Creamery	Co-op	W. Greening, Sec.	Artesian	E. J. Hankner	Separator.	Hd.
95	Waverly	La Fayette Creamery Co.	Co-op	L. C. Oberdorf, Sec.	Waverly	Henry Piegors	Separator.	Test.
96	Waverly	Washington Creamery	Co-op	S. M. Lehman	Waverly	Dick Bollerman	Separator.	Test.
97	Tripoli	Siegle Creamery Co.	Co-op	J. Jones, Sec.	Waverly R. F. D., No. 1	Wm. Lenius	Separator.	Test.
98	Waverly	Wisconsin Cond. Milk Co.	Stock	W. A. Douglas, Mgr	Waverly	Con. D. E. Sheldon	Separator.	H. & T. Test.
99	Denver	The Farrington Creamery (s)	Co-op	F. Garton, Sec.	Cedar Falls		Separator.	Test.
<i>Buchanan County.</i>								
100	Brandon	Brandon Creamery Co.	Co-op	W. W. Bain	Brandon	M. E. Benson	Separator.	Test.
101	Fairbank	Fairbank Farmers' Creamery Co.	Co-op	E. Sanborn	Fairbank	H. H. Opperman	Separator.	Test.
102	Hazelton	Hazelton Farmers' Creamery	Stock	N. C. Peck	Hazelton	M. W. Ashby	S. & G. C. Test.	Test.
103	Jeanp	Jeanp Creamery Co.	Co-op	James Dalton, Sec.	Jeanp	E. M. Vorse	S. & G. C. Test.	Test.
104	Independence	Independence (s)	Stock	C. B. Hubbard, Mgr	Independence	M. O. Wheelock	S. & G. C. Test.	Test.
105	Rowley	Independence (s)	Stock	C. B. Hubbard, Mgr	Independence		S. & G. C. Test.	Test.
106	Littleton	Independence (s)	Stock	C. B. Hubbard, Mgr	Independence		S. & G. C. Test.	Test.
107	Vista	C. B. Hubbard, Manager (s)	Stock	Thos. Taylor	Independence		S. & G. C. Test.	Test.
108	Lamont	Lamont Creamery Co.	Stock	Geo. L. Weeks, Manager	Lamont	F. S. Kieckner	Separator.	Test.
109	Aurora	Aurora Creamery	Ind.	Geo. L. Weeks, Manager	Independence	Geo. L. Weeks	Separator.	Test.
110	Stanley	Stanley Creamery	Ind.	C. B. Hubbard	Independence	F. W. Strong	Separator.	Test.
111	Winthrop	Winthrop Creamery	Stock	C. B. Hubbard	Independence	W. H. Plank	Separator.	Test.
112	Newtonville	Winthrop Creamery (s)	Stock	C. B. Hubbard	Independence		Separator.	Test.
113	Middlefield	Winthrop Creamery (s)	Stock	C. B. Hubbard	Independence		Separator.	Test.
114	Quasqueton	Winthrop Creamery (s)	Stock	C. B. Hubbard	Independence		Separator.	Test.
115	Otterville	Otterville Creamery Co.	Co-op	J. F. Booth	Otterville	Martin Youndt	Separator.	Test.
116	Rowley	Rowley Co-operative Co.	Co-op	John C. Orth	Rowley	Horbert Brochon	Separator.	Test.
117	Hamerville	Walker Creamery	Ind.	H. J. Nictert	Walker		Separator.	Test.

Buena Vista County.

118	Albert City.....	Fairfield Creamery Co.....	Co-op.....	O. P. Peterson.....	Albert City.....	S. M. Geyer.....	Separator.....	Test.
119	Alta.....	Fairfield Creamery Co. (s).....	Co-op.....	O. P. Peterson.....	Alta.....	W. H. Oline.....	Separator.....	Test.
120	Alton.....	Coon River Co-op. Creamery.....	Ind.....	E. C. P. Cornelissen, Prop.....	Newell.....	Chas. Allison.....	Separator.....	Test.
121	Newell.....	Newell Cheese Factory Co. (s).....	Stock.....	Alex. J. Davis.....	Newell.....	Fred Holtz.....	Separator.....	Test.
122	Verina.....	Newell Cheese Factory Co.....	Stock.....	Alex. J. Davis.....	Newell.....	Holmes.....	Separator.....	Test.
123	Peterson.....	Crescent Creamery.....	Ind.....	R. S. W. Vargen, Prop.....	Peterson.....	P. C. Fluskegaard.....	Separator.....	Test.
124	Truesdale.....	Grant Creamery Co.....	Stock.....	Geo. W. Cole, Sec.....	Storm Lake.....	G. C.....	G. C.....	Test.
125	Truesdale.....	Truesdale Creamery.....	Ind.....	Henry H. Hest.....	Truesdale.....	G. C.....	G. C.....	Test.
126	Marathon.....	Laurens Creamery (s).....	Ind.....	W. and J. G. Hinn, Props.....	Laurens.....	S. & G. C.....	S. & G. C.....	Test.

Butler County.

128	Applington.....	Applington Co-op. Creamery Co.....	Co-op.....	R. B. Eckles, Sec. and Mgr.....	Applington.....	W. Gilbert.....	Separator.....	Test.
129	Arden.....	Dumont Creamery (s).....	Stock.....	T. I. Laird.....	Dumont.....	Sam Patterson.....	Separator.....	Test.
130	Ardenville.....	White Rose Creamery.....	Ind.....	Sam Patterson.....	Ardenville.....	W. J. Daubich.....	Separator.....	Test.
131	Alison.....	Alison Creamery.....	Ind.....	W. I. Daniels.....	Alison.....	Fred Farwell.....	Separator.....	Test.
132	Bristolow.....	Bristolow Creamery.....	Ind.....	W. I. Daniels.....	Bristolow.....	W. Barkley.....	Separator.....	Test.
133	Butler Center.....	Alison Creamery (s).....	Ind.....	E. D. Wilcox, Mgr.....	Alison.....	A. W. Snyder.....	Separator.....	Test.
134	Clarksville.....	Clarksville Creamery Co.....	Stock.....	T. I. Laird.....	Clarksville.....	C. Nieber.....	Separator.....	Test.
135	Dumont.....	Dumont Creamery.....	Stock.....	A. Onkles.....	Dumont.....	P. J. Hagarty.....	Separator.....	Test.
136	Eleanor.....	Montrose Central Creamery.....	Co-op.....	O. N. Grandall.....	Eleanor.....	Fred H. Fisher.....	Separator.....	Test.
137	Greene.....	Cold Water Co-op. Dairy Ass'n.....	Co-op.....	H. Delner, Sec.....	Greene.....	Peter Larson.....	Separator.....	Test.
138	Greene.....	Northern West Point Dry Co.....	Co-op.....	Jas. P. Johnson, Prop.....	Greene Rural.....	W. F. Graham.....	Separator.....	Test.
139	Kesley.....	Hillsville Creamery.....	Ind.....	William D. Ceperley.....	Kesley.....	N. H. Codner.....	Separator.....	Test.
140	New Hartford.....	Beaver Creamery Co.....	Co-op.....	Ed Fitch.....	New Hartford.....	Adolph Olsen.....	Separator.....	Test.
141	Parkersburg.....	Crescent Creamery Co.....	Co-op.....	M. A. Onkles.....	Parkersburg.....	August Thieleke.....	Separator.....	Test.
142	Parkersburg.....	Montrose Central Creamery (s).....	Co-op.....	Adolph Olsen, Sec.....	Parkersburg.....	Louis Grobe.....	Separator.....	Test.
143	Parkersburg.....	Parkersburg Creamery.....	Stock.....	W. H. Johnson, Mgr.....	Parkersburg.....	O. F. Courbat.....	Separator.....	Test.
144	Coster.....	Columbian Creamery.....	Ind.....	N. H. Codner.....	Coster.....	.....	Separator.....	Test.
145	Shell Rock.....	Shell Rock Creamery Ass'n.....	Co-op.....	W. H. Johnson, Mgr.....	Shell Rock.....	.....	Separator.....	Test.
146	Shell Rock.....	Victory Creamery.....	Stock.....	N. H. Codner.....	Shell Rock.....	.....	Separator.....	Test.
147	Sinclair.....	Parkersburg Creamery (s).....	Stock.....	O. F. Courbat.....	Waverly.....	.....	Separator.....	Test.
148	Scrannton.....	Albion Creamery Co.....	Co-op.....	.....	Parkersburg.....	.....	Separator.....	Test.

Cathoun County.

149	Lytton.....	Williams' Creamery.....	Co-op.....	John C. Haack.....	Fonda.....	Olin Olsen.....	Separator.....	Test.
150	Manson.....	Manson Creamery.....	Ind.....	G. B. Moon.....	Manson.....	Chas. Moon.....	Separator.....	Test.
151	Knocke.....	Butler Center Co-op. Dry Co.....	Co-op.....	H. F. Meyer, Mgr.....	Pomeroy.....	J. P. Cummings.....	Separator.....	Test.
152	Pomeroy.....	Pomeroy Co-op. Creamery.....	Co-op.....	John Behrens.....	Pomeroy.....	Geo. F. Allard.....	Separator.....	Test.
153	Rockwell City.....	Andrew Wood & Co.....	Stock.....	Andrew Wood, Pres.....	Rockwell City.....	S. & G. C.....	Separator.....	Test.
154	Somers.....	Somers Creamery.....	Ind.....	Geo. C. Smith, Prop.....	Somers.....	Geo. C. Smith.....	Separator.....	Test.
155	Richard P. O.....	Somers Creamery (s).....	Ind.....	Geo. C. Smith, Prop.....	Somers.....	.....	Separator.....	Test.
156	Lytton.....	A. Wood & Co. (s).....	Stock.....	Andrew Wood, Pres.....	Rockwell City.....	.....	Separator.....	Test.
157	Lytton.....	Blue Grass Creamery.....	Ind.....	I. Hillmann.....	Lytton.....	Geo. Hillmann.....	Separator.....	Test.
158	Lake City.....	Lake City Co-op. Creamery.....	Co-op.....	.....	Lytton.....	.....	Separator.....	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of rectifying milk.
<i>Carroll County.</i>								
159	Arcadia	Golden Star Creamery Co.	Stock.	C. Wilbers, Sec. and Mgr.	Arcadia	S. J. Jans	Separator.	Test.
160	Coon Rapids	Coon Rapids Creamery	Ind.	H. L. Fest, Prop.	Coon Rapids.	W. R. Wright	Separator.	Test.
161	Debham	Lewis Bros Creamery	Ind.	Lewis Bros	Debham	Reese Lewis	Separator.	Test.
162	Halbur	Halbur Creamery Co.	Co-op.	Christ Hansen, Sec. & Mgr.	Halbur	Joe. T. Stangl	Separator.	Hd.
163	Manning	Manning Creamery	Ind.	J. H. Rushion	Fairmount, Neb	O. P. Yant	G. C.	Test.
164	Manning	Washington Township Creamery.	Co-op.	John J. Kruse	Manning	" J. Lancelot	Separator.	Test.
165	Mount Carmel	Mt. Carmel Mutual Creamery Co.	Stock.	Martin Berger, Sec. & Mgr.	Carroll, Route No. 2	Joseph A. Stamen	Separator.	Test.
166	Ralston	Ralston Creamery	Ind.	V. Young, Prop.	Ralston	V. Young	Separator.	Test.
167	Roselle	Rose Valley Creamery	Ind.	C. Kohorst, Prop.	Roselle	C. Kohorst	Separator.	Hd.
168	Templeton.	Templeton Creamery Co.	Stock.	Geo. Bieri	Templeton	M. J. Wagner	Separator.	Test.
169	Willey	Willey Creamery	Ind.	A. Witte, Prop.	R. R. No. 5, Willey	W. B. Witte	Separator.	Hd.
170	Breda	Viola Mut. Creamery Ass'n.	Co-op.	Paul Luckow	Breda	Christ Sorenson	Separator.	Test.
171	Lanesboro	Lanesboro Creamery	Co-op.	Henry Miller	Hidden	F. E. Wheeler	Separator.	Test.
<i>Cass County.</i>								
173	Atlantic	Elgin Creamery Co.	Stock	O. Sands, Pres.	Chicago, Ill.	P. M. Williams	Separator.	Test.
174	Aula	Elgin Creamery Co. (s)	Stock	O. Sands, Pres.	Chicago, Ill.	.....	Separator.	Test.
175	Benton Center	Elgin Creamery Co. (s)	Stock	O. Sands, Pres.	Chicago, Ill.	.....	Separator.	Test.
176	Lewis	Elgin Creamery Co. (s)	Stock	O. Sands, Pres.	Chicago, Ill.	.....	Separator.	Test.
177	Lyman	Elgin Creamery Co. (s)	Stock	O. Sands, Pres.	Chicago, Ill.	.....	Separator.	Test.
178	Marne	Elgin Creamery Co. (s)	Stock	O. Sands, Pres.	Chicago, Ill.	.....	Separator.	Test.
179	Masena	Elgin Creamery Co. (s)	Stock	O. Sands, Pres.	Chicago, Ill.	.....	Separator.	Test.
180	Messena	Elgin Creamery Co. (s)	Stock	O. Sands, Pres.	Chicago, Ill.	.....	Separator.	Test.
181	Messena	Elgin Creamery Co. (s)	Stock	O. Sands, Pres.	Chicago, Ill.	.....	Separator.	Test.
<i>Cedar County.</i>								
182	Bennett	Golden Star Creamery	Ind.	Aug. Henriks & Co.	Bennett	W. H. Kronger	Separator.	Test.
183	Clarance	Clarance Creamery	Ind.	Henry Strunk	Clarance	Henry Strunk	Separator.	Test.
184	Clarance	Union Farmer & Creamery	Stock	Ernest Huxoll	Clarance	Ernest Huxoll	Separator.	Test.

185	Durant	Durant Butter and Cheese Ass'n	Stock	Chas. Sorgentrey	Lowden	Durant	Henry Puck	G. O.	Test.
186	Lowden	Home Creamery	Ind.	G. F. Reinking	Lowden	Lowden	G. F. Reinking	G. O.	Ind.
187	Lowden	Yankee Run Creamery	Ind.	Chas. Boettger	Lowden	Lowden	Chas. Boettger	Separator.	Test.
188	Lowden	Yankee Run Creamery (s)	Ind.	Eves & Elliott	West Branch	West Branch	Eves & Elliott	Separator.	Test.
189	West Branch	West Branch Creamery	Ind.	Eves & Elliott	West Branch	West Branch	Eves & Elliott	Separator.	Ind.
190	Springdale	West Branch Creamery (s)	Ind.	Eves & Elliott	West Branch	West Branch	Eves & Elliott	Separator.	Ind.
<i>Cerro Gordo Co. unity.</i>									
191	Clear Lake	Clear Lake Creamery	Ind.	G. W. Kennedy	Thornton	Thornton .....	.....	S. & G. O.	Test.
192	Mason City	Mason City Creamery	Ind.	J. G. MacKeller & Co. Prop.	Mason City	Mason City .....	.....	Separator.	Test.
193	Plymouth	Plymouth Creamery	Ind.	Geo. A. Whaley, Prop.	Plymouth	Plymouth	Chor. Armstrong	Separator.	Test.
194	Portland	Portland Creamery	Ind.	C. H. Sweet, Prop.	Portland	Portland	H. Clansen	Separator.	Test.
195	Rockwell	Rockwell Creamery	Ind.	G. H. Gurlier, Prop.	DeKalb, Ill.	DeKalb, Ill.	Chas. Logan	G. O.	Test.
196	Thornton	Thornton Creamery	Ind.	G. W. Kennedy	Thornton	Thornton	Chris. Mortinson	G. O.	Ind.
<i>Cherokee County.</i>									
197	Aurelia	Aurelia Creamery	Ind.	Chris. Knutzen, Sec.	Aurelia	Aurelia	Chris. Knutzen	Separator.	Test.
198	Baum	Quimby Creamery (s)	Ind.	W. N. Schwartz, Sec.	Quimby	Quimby	A. Younger	Separator.	Test.
199	Larrabee	Larrabee Creamery	Ind.	A. Younger, Sec.	Larrabee	Larrabee	O. E. Austin	Separator.	Test.
200	Marcus	White Rose Creamery	Ind.	C. E. Austin, Prop.	Marcus	Marcus	Jay E. Garden	Separator.	Test.
201	Quimby	Quimby Creamery	Ind.	W. N. Schwartz, Sec.	Quimby	Quimby	L. C. Oarder	Separator.	Test.
202	Washita	Washita Creamery	Ind.	Chas. Robertson, Jr., Prop.	Washita	Washita	Riedesel & Son	Separator.	Test.
203	Quimby	Riedesel & Son	Ind.	Riedesel & Son, Sec.	Aurelia	Aurelia .....	.....	Separator.	Test.
<i>Chickasaw Co. unity.</i>									
204	Alta Vista	Alta Vista Farmers Cr'y Ass'n	Co-op	William Vick, Sec.	Alta Vista	Alta Vista	C. H. Capper	Separator.	Test.
205	Boyd	Farmers' Creamery Ass'n	Co-op	Wm. Denner, Sec.	Boyd	Boyd	J. M. Zabrud	Separator.	Test.
206	Deerfield	Deerfield Creamery	Co-op	J. W. Kane, Sec.	Deerfield	Deerfield	R. E. Newberry	Separator.	Test.
207	Devon	Devon Farmers' Co-op. Cr'y Co.	Co-op	Alfred Larson, Sec.	Devon	Devon	A. W. Kaestler	Separator.	Test.
208	Fredericksburg	New Hampton Creamery (s)	Ind.	J. L. Humphrey, Jr., Prop.	New Hampton	New Hampton .....	.....	Separator.	Test.
209	Fredericksburg	New Hampton Creamery (s)	Ind.	J. L. Humphrey, Jr., Prop.	New Hampton	New Hampton .....	.....	Separator.	Test.
210	Fredericksburg	Fredericksburg Butter Factory	Co-op	Wm. Bee, Sec.	Fredericksburg	Fredericksburg	H. E. Forrester	Separator.	Test.
211	Ionis	Ionis Co-op. Creamery Co.	Co-op	K. K. Conley, Sec.	Ionis	Ionis	J. W. Cagley	G. O.	Test.
212	Jerico	Jerico Creamery Ass'n	Co-op	Chas. Barrett, Sec.	Jerico	Jerico	Martin Donovan	Separator.	Test.
213	Lawler	Lawler Creamery Co.	Co-op	H. M. Kout, Sec.	Lawler	Lawler	Fred Zigler	Separator.	Test.
214	Little Turkey	Little Turkey Creamery	Stock	A. O. Elvidge, Pres.	Little Turkey	Little Turkey	L. H. Lee	Separator.	Test.
215	Republic	Republic Creamery	Ind.	Chas. Gurlier, Mgr.	De Kalb, Ill.	De Kalb, Ill.	R. J. White	G. O.	Test.
216	Nashua	Nashua Creamery	Ind.	Chas. Gurlier, Mgr.	Nashua	Nashua	A. Bethke	Separator.	Test.
217	Nashua	Farmers' Mutual Co-op. Cr'y	Co-op	T. W. Munson, Sec.	Nashua	Nashua	S. Peterson	Separator.	Test.
218	New Hampton	New Hampton Creamery	Ind.	F. T. Riley, Mgr.	New Hampton	New Hampton	P. Fred Schreiber	Separator.	Test.
219	N. Washington	North Washington Creamery Co.	Co-op	H. O. Gindorf, Sec.	N. Washington	N. Washington	G. T. Sangquist	Separator.	Test.
220	Saunder	Saunder Co-op. Creamery Co.	Co-op	H. O. Nativ, Sec.	Saunder	Saunder	C. R. Gist	Separator.	Test.
221	Williamstown	Williamstown Cr'y Association	Co-op	Julius Hall, Sec.	Williamstown	Williamstown	Williamstown	Separator.	Test.
222	Nashua	Farmers Co-op. Creamery Co.	Co-op	B. W. Blinn, Sec.	Nashua	Nashua	F. E. Pucker	G. O.	In & T.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESSES OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of receiving milk.
<i>Clark County.</i>								
223	Lacelle.....	Elgin Creamery (s).....	Stock..	O. Sands.....	Chicago.....	.....	Separator.	Test.
224	Hopeville.....	Elgin Creamery (s).....	Stock..	O. Sands.....	Chicago.....	.....	Separator.	Test.
225	Murray.....	Elgin Creamery.....	Stock..	O. Sands.....	Chicago.....	James Currie.....	Separator.	Test.
226	Murray.....	Elgin Creamery (s).....	Stock..	O. Sands.....	Chicago.....	.....	Separator.	Test.
<i>Clay County.</i>								
227	Dickens.....	Farmers Co-op. Creamery Co.....	Co-op..	Wm. McCurdy, Sec. & Mgr.	Dickens.....	A. L. Remington.....	Separator.	Test.
228	Dickens.....	Siox Valley Creamery.....	Ind.....	H. B. Gregory.....	Spencer.....	F. A. Golden.....	Separator.	Test.
229	Every.....	Every Creamery.....	Ind.....	H. B. Gregory.....	Spencer.....	T. N. Hollister.....	Separator.	Test.
230	Fostoria.....	Fostoria Creamery Co.....	Stock..	B. D. Dunning, Mgr.....	Fostoria.....	Frank Riley.....	Separator.	Test.
231	Greenville.....	Greenville Creamery.....	Ind.....	A. Young.....	Larabee.....	O. Ellis.....	Separator.	Test.
232	Greenville.....	Siox Valley Creamery (s).....	Ind.....	H. B. Gregory.....	Spencer.....	.....	Separator.	Test.
233	Spencer.....	Spencer Creamery.....	Ind.....	W. Kepler.....	Spencer.....	Frank Repka.....	Separator.	Test.
234	Spencer.....	Spencer Creamery (s).....	Ind.....	W. Kepler.....	Spencer.....	.....	Separator.	Test.
235	Terrell.....	Trumbull Lake Creamery Co.....	Stock..	C. M. Varney, Sec. & Mgr.	Terrell.....	R. L. Bradburn.....	Separator.	Test.
236	Webb.....	Webb Creamery.....	Ind.....	J. A. Reid, Prop.....	Webb.....	J. A. Reid.....	Separator.	Test.
237	Royal.....	Royal Creamery.....	Stock..	D. N. Gish, Mgr.....	Royal.....	D. N. Gish.....	Separator.	Test.
238	Willow Creek.....	Willow Creek (s).....	Stock..	D. N. Gish, Mgr.....	Royal.....	.....	Separator.	Test.
239	Langdon.....	Langdon Co-op Creamery Co.....	Co-op..	E. Kingsley, Sec & Mgr.....	Langdon.....	Chas. Johnson.....	Separator.	Test.
<i>Clayton County.</i>								
240	Communis.....	Communia Creamery.....	Stock..	A. O. Elvidge, Pres.....	Elkader.....	Peter Klink.....	Separator.	Test.
241	Edgewood.....	Fidelity Creamery.....	Ind.....	H. F. Beyer.....	Edgewood.....	Ed. J. Whipple.....	Separator.	Test.
242	Elkader.....	Elkader Creamery.....	Stock..	A. O. Elvidge, Pres.....	Elkader.....	Geo. Hedfron.....	Separator.	Test.
243	Elkader.....	Elkader Creamery.....	Ind.....	H. F. Beyer.....	Edgewood.....	Ole Haug.....	Separator.	Test.
244	Garnaville.....	Garnaville F'm's Co-op. Cr'y.....	Co-op..	H. H. Kuhlman, Sec.....	Garnaville.....	C. B. Chandler.....	Separator.	Test.
245	Glard.....	Glard Creamery.....	Stock..	H. O. Elvidge, Pres.....	Elkader.....	Harvey Clough.....	Separator.	Test.
246	Gunder.....	Clermont Creamery (s).....	Co-op..	A. F. Ferguson, Sec.....	Clermont.....	.....	Separator.	Test.

247	Littleport	Littleport Creamery	Ind	H. F. Beyer	Edgewood	Dan Whipple	Separator	Test
248	Luana	Luana Fm's Co-op. Cr'y Co.	Co-op	W. H. Russell, Sec. & Mgr.	Luana	C. C. Clifton	Separator	Test
249	McKenville	McKenville Creamery	Stock	A. O. Elvidge, Pres.	Elkader	A. H. Peacock	Separator	Test
250	Monona	Monona Creamery	Stock	A. O. Elvidge, Pres.	Elkader	R. L. Ogley	Separator	Test
251	Osborne	Osborne Creamery	Stock	A. O. Elvidge, Pres.	Elkader	H. L. Cagley	Separator	Test
252	Osterdock	Osterdock Creamery Co.	Stock	A. A. Bush, Sec.	Osterdock	J. G. Slemmes	Separator	Test
253	St. Olaf	St. Olaf Creamery	Ind	Larson & Mickelson	St. Olaf	H. L. Micklejohn	S. & G. O.	Test
254	Strawberry Point	Strawberry Point Creamery Ass'n ..	Co-op	A. R. Cardler, Sec. & Mgr.	Strawberry Point	P. H. Keifer	Separator	Test
255	Volga City	Volga City Fm's Co-op. Cr'y Co.	Co-op	A. E. Olinger, Sec.	Volga City	Jos. Jones	Separator	Test
256	Highland Tp.	Highland Tp. Farmer's Cr'y Co.	Co-op	G. Gregerson	R. R. No. 2, ...	James Doty	Separator	Test
257	Watson	Blue Grass Creamery Co.	Co-op	F. V. Blaha, Sec.	Elgin	James Doty	S. & G. O.	Test
258	Windsor	Farmersburg Co-op. Creamery Co.	Co-op	John Johnson, Sec.	R. F. D. No. 1, ...	F. A. Fiele	S. & G. O.	Test
259	McGregor	McGregor Creamery	Stock	The J. D. Bickel Produce Co.	Farmersburg	L. D. Hendershott	Separator	Test
Clinton County.								
260	Browns	Springbrook Creamery (s)	Ind	John Newman Co.	Elgin, Ill	Geo. Burton	Separator	Test
261	Charlotte	Springbrook Creamery	Ind	John Newman Co.	Elgin, Ill	L. J. Spohn	Separator	Test
262	Delmar Junction	Springbrook Creamery	Ind	John Newman Co.	Elgin, Ill	Frank Leinbaugh	Separator	Test
263	Elwood	Springbrook Creamery	Ind	Chas. Hanbold	Grand Mound	Chas. Hanbold	Separator	Test
264	Grand Mound	Grand Mound Creamery	Ind	Stimpson, Mel. & Co.	Grand Mound	Frank Leinbaugh	Separator	Test
265	Lost Nation 19	Diamond Creamery Co. (s)	Ind	Stimpson, Mel. & Co.	Boston, Mass	Chas. Hanbold	Separator	Test
266	Lost Nation 23	Diamond Creamery Co. (s)	Ind	Stimpson, Mel. & Co.	Boston, Mass	Chas. Hanbold	Separator	Test
267	Lost Nation 28	Diamond Creamery Co. (s)	Ind	Stimpson, Mel. & Co.	Boston, Mass	Chas. Hanbold	Separator	Test
268	Quigley	Springbrook Creamery	Ind	John Newman & Co.	Elgin, Ill	A. J. Spohn	Separator	Test
269	Bluedra.	Grand Mound Creamery (s)	Ind	Chas. Hanbold	Grand Mound	A. J. Spohn	Separator	Test
Clinton County.								
270	Tedds Grove	Springbrook	Ind	John Newman Co.	Elgin, Ill	M. P. Kramer	Separator	Test
271	Toronto	Farmers' Co-op. Creamery Co.	Co-op	Edward Hart, Jr., Sec.	Toronto	Peter M. Jenn.	Separator	Test
272	Weldon	Springbrook Creamery	Ind	John Newman Co.	Elgin, Ill	C. B. Best	Separator	Test
273	Wheatland	Yankee Creamery (s)	Ind	Chas. Boettger	Lowden	C. B. Best	Separator	Test
274	Lost Nation	Farmers' Co-op. Creamery Co.	Co-op	A. L. Cook, Sec.	Lost Nation	A. F. Carrier	Separator	Test
275	Clinton	Clinton Creamery	Ind	J. Wright & Sons	Clinton	E. J. Wright	G. O.	Test
276	Wheatland	Wheatland Creamery	Ind	A. E. Banta	Wheatland	A. E. Banta	Separator	Test
Crawford County.								
277	Aspenwall	Manning Creamery Co. (s)	Stock	J. H. Rushton, Pres.	Fairmont, Neb.	John C. Keller	G. O.	Test
278	Charter Oak	Charter Oak Creamery Co.	Stock	E. E. Springer, Sec.	Charter Oak	A. F. Durkee	G. O. & S.	Test
279	Denison	The Denison Creamery	Ind	J. H. Rushton, Pres.	Fairmont, Neb.	A. F. Durkee	G. O.	Test
280	West Side	Manning Creamery (s)	Stock	J. H. Rushton, Pres.	Fairmont, Neb.	A. F. Durkee	G. O.	Test
281	Kiron	Kiron Co-op. Mutual Cr'y Co.	Co-op	W. M. Strahn, Gen. M. & S.	Kiron	H. J. Healy	Separator	Test
Dallas County.								
282	Brough	Yale Creamery (s)	Ind	Park & Son	Yale	Yale	Separator	Test

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of feeding milk.
283	Dallas Center ..	Dallas Center Butter & Cream Co	Stock ..	D. E. Hoff, Sec	Dallas Center ..	W. P. Hall	Separator.	Test.
284	Dawson	Dawson Star Creamery	Ind.	O. S. Gillon, Mgr	Dawson .....	.....	Separator.	Test.
285	Dexter	Warner's Co-op. Creamery Ass'n	Co-op ..	Jas. L. Keschle, Sec	Dexter	Jas. L. Keschle.	Separator.	Test.
286	Minburn	Waterloo Creamery Co. (s)	Stock ..	Burt B. Corliss, Pres	Des Moines ..	.....	Separator.	Test.
287	Panther Creek ..	Dallas Center But'r & Cream Co. (s)	Stock ..	D. E. Hoff, Sec	Dallas Center ..	.....	Separator.	Test.
288	Perry	J. M. Moody & Sons	Ind.	J. Moody & Son ..	Perry	Fred French ..	Separator.	Test.
289	Van Meter	Waterloo Creamery Co. (s)	Stock ..	Bert B. Corliss ..	Des Moines ..	.....	Separator.	Test.
290	Waukeo	Waterloo Creamery Co. (s)	Stock ..	Bert B. Corliss ..	Des Moines ..	.....	Separator.	Test.
291	Woodward	Woodward Creamery	Ind.	H. P. Caloney, Prop.	Woodward ..	A. B. Caloney ..	Separator.	Test.
	<i>Davis County.</i>							
292	Bloomfield	Bloomfield Creamery	Ind.	W. H. Davis	Bloomfield ..	Joe H. Davis ..	Separator.	Test.
293	Drakeville	Bloomfield Creamery (s)	Ind.	W. H. Davis	Bloomfield ..	.....	Separator.	Test.
294	<i>Davis County.</i>							
295	Pulaski	Pulaski Creamery	Ind.	J. J. Miller, Mgr	Pulaski	J. M. Hunt	G. O.	Test.
296	Troy	Milton Creamery (s)	Ind.	V. F. Cooley	Milton .....	.....	G. O.	Test.
	<i>Decatur County.</i>							
297	Grand River	Grand River Butter and C. Fact.	Stock ..	Covington and Overholzer.	Grand River ..	Sherman Beck ..	Separator.	Test.
298	Leon	Leon Creamery	Stock ..	A. McCurney & Co.	Leon	A. McCurney ..	S. & G. O.	Test.
299	Le Roy	Old Colony Creamery (s)	Ind.	T. G. Hyde, Mgr	Humeston ..	.....	Separator.	Test.
300	Lamont	Lamont Creamery (s)	Ind.	T. G. Hyde, Mgr	Humeston ..	.....	Separator.	Test.
	<i>Delaware County.</i>							
301	Almora	Almora Creamery Co.	Co-op ..	F. L. Carpenter, Sec	Almora Stati'n	J. J. Schmidt ..	Separator.	Test.
302	Colesburg	Colesburg Creamery Co.	Co-op ..	Robt. A. Gull, Sec. & Mgr	Colesburg ..	A. L. Landis ..	Separator.	Test.
303	Lazel Green	Palmer-Hubbard Co.	Ind.	Palmer-Hubbard Co.	Independence ..	W. McKusker ..	Separator.	Test.
304	Dahl	Dahl Creamery Co.	Co-op ..	C. E. Angell, Sec	Dahl	W. McDowell ..	Separator.	Test.
305	Dundee	Silver Spring Creamery Co.	Co-op ..	W. E. Woodward, Mgr	Dahl	Chas. H. Howard	Separator.	Ed.
306	Dundee	Dundee Creamery	Ind.	H. F. Boyer	Edgewood ..	Fred Stephenson.	Separator.	Test.
307	Earlville	Gills Edge Creamery	Ind.	J. M. Dunn, Prop.	Earlville	Ed. McCaffrey ..	Separator.	Test.

303	Earlville	Earlville Creamery	Ind.	J. M. Dunn, Prop.	Earlville	J. M. Dunn	Separator.	Test.
309	Ryan	Palmer-Hubbard Co. (s)	Ind.	Palmer-Hubbard Co.	Independence	J. J. McAvary	Separator.	Test.
310	Ryan	Artisan Creamery	Ind.	J. J. McAvary, Prop.	Ryan	W. P. Crall	Separator.	Test.
311	Greeley	Greeley Co-op. Creamery	Co-op ..	J. C. Mathews, Sec.	Hopkinton	J. H. Griffith	Separator.	Test.
312	Hopkinton	Hopkinton Co-op. Creamery Co.	Co-op ..	H. G. Kelsor	Ryan	W. S. Heagy	Separator.	Test.
313	Ryan	Manchester Co-op. Creamery	Co-op ..	J. James Bishop, Sec. & Mgr.	Manchester	W. C. Elder	Separator.	Test.
314	Manchester	Spring Branch Creamery Co.	Co-op ..	W. J. Davis, Sec. & Mgr.	Delaware	A. A. Palmer	Separator.	Test.
315	Manchester	Masonville Co-op. Creamery Co.	Co-op ..	F. S. Harris, Sec.	Masonville	W. A. Smarzo	Separator.	Test.
316	Masonville	Central Co-op. Creamery	Co-op ..	F. H. White, Sec. & Mgr.	Worthington	Anton Smith	Separator.	Test.
317	Worthington	Dear Grove Creamery	Co-op ..	F. H. Klostman, Sec.	New Vienna	Geo. Dormayer	Separator.	Test.
318	Petersburg	Petersburg Co-op. Creamery	Co-op ..	H. H. Scherbring, Sec.	Petersburg	Ed. Budden	Separator.	Test.
319	Petersburg	Palmer-Hubbard Co.	Co-op ..	Palmer-Hubbard Co.	Independence	Geo. E. Packard	Separator.	Test.
320	Willow Grove	Palmer-Hubbard Co. (s)	Ind.	Palmer-Hubbard Co.	Independence	W. W. Brazelton	Separator.	Test.
321	Broadway	Silver Creek Creamery	Ind.	Geo. E. Packard, Prop.	Ryan	Walter Pollard	Separator.	Test.
322	Ryan	Sand Spring Co-op. Creamery Co.	Co-op ..	F. E. Wood, Sec. and Mgr.	Sand Spring	Geo. E. Packard	Separator.	Test.
323	Sand Spring	Farmers' Co-op. Creamery Co. (s) ..	Co-op ..	M. E. Blair, Sec. and Mgr.	Manchester	W. W. Brazelton	Separator.	Test.
324	Thorpe	Cedar Valley Creamery Co. (s) ..	Stock ..	G. L. Hubbell	Manchester	W. W. Brazelton	Separator.	Test.
325	Ehler	Cedar Valley Creamery Co. (s) ..	Stock ..	G. L. Hubbell	Cedar Rapids	W. W. Brazelton	Separator.	Test.
<i>Dickinson County.</i>								
326	Milford	Milford Far. B. & C. Ass'n	Co-op ..	H. H. Shipman, Sec. & Mgr.	Milford	J. O. Miller	Separator.	Test.
327	Spirit Lake	Farmers' Co-op. Creamery Ass'n ..	Co-op ..	H. Van Steenburg	Spirit Lake	Geo. Williams	S. & G. C.	Test.
328	Terrill	Terrill Co-op. Creamery Ass'n ..	Co-op ..	Mrs. J. O. Woods	Terrill	W. C. Frank	Separator.	Test.
329	Wallace	Wallace Creamery	Ind.	T. L. Case, Mgr.	Wallace	T. L. Case	Separator.	Test.
330	Lake Park	Farmers' Co-op. Creamery	Co-op ..	J. G. Chrysler, Sec.	Lake Park	E. A. Stant	S. & G. C.	Test.
<i>Dubuque County.</i>								
331	Balltown	Balltown Co-op. Creamery Co.	Co-op ..	C. D. Harrington, Sec.	Specht's Ferry Rural Route 1.	Henry Koehler	Separator.	Test.
332	Cascade	Cascade Co-op. Creamery Co.	Co-op ..	P. J. Conlin, Sec.	Cascade	E. C. Elliott	Separator.	Test.
333	Cascade	Spring Valley Creamery Co.	Co-op ..	John N. Kremer, Sec.	Cascade	W. H. Maginnis	Separator.	Test.
334	Epworth	Farmers' Golden Star Cr'y Co.	Stock ..	F. P. Kern, Mgr.	Epworth	John B. Feldman	Separator.	Test.
335	Epworth	Epworth Creamery Co.	Co-op ..	J. D. Burrell, Sec.	Epworth	J. M. Wolcott	Separator.	Test.
336	Farley	Farley Creamery Co.	Co-op ..	G. W. Cropp, Mgr.	Farley	Thos. Landis	Separator.	Test.
337	Farley	John's Creek Creamery	Ind.	A. K. Heald & Son	Farley	Rob. Parrott	Separator.	Test.
338	Farley	Pleasant View	Ind.	A. K. Heald & Son	Farley	Will Dubs	Separator.	Test.
339	Farley	Fillmore Co-op. Creamery Co.	Co-op ..	Wm. Pagan, Sec.	Fillmore	Peter Butler	Separator.	Test.
340	Farley	Pin Oak Creamery	Co-op ..	Peter Pfaff, Sec.	Fillmore	J. P. Critches	Separator.	Test.
341	Dubuque	Love Co-operative Creamery Co.	Co-op ..	Mich. Gansamer, Jr., Mgr.	R. K. E. & Dubuque	J. P. Critches	Separator.	Test.
342	Dubuque	Globe Creamery	Co-op ..	John Langel, Sec.	Luxemburg	B. Goetzinger	Separator.	Test.
343	Dubuque	Hickory Valley	Stock ..	W. C. Stratton, Sec.	Luxemburg	Frank Ruby	Separator.	Test.
344	New Vienna	New Vienna Central Creamery Co.	Co-op ..	John L. Cooney, Sec.	New Vienna	Frank Ruby	Separator.	Test.
345	O'Neill	Oak Grove Creamery	Co-op ..	Jacob Kerper, Mgr.	O'Neill	Frank Ruby	Separator.	Test.
346	Richardville	Farmers' Creamery	Stock ..	John Fisher, Sec.	O'Neill	John W. Farn	Separator.	Test.
347	Laureville	Columbian Creamery	Ind.	Laure Bros.	Route E. Dubuque	Harry Sylvester	Separator.	Test.
348	Terrill	Sherill Creamery Co.	Co-op ..	J. C. Breibach	Specht's Ferry	John Stillmunke	Separator.	Test.
349	Laureville	Breibach Bros.	Ind.	J. C. Breibach	Laureville	John Stillmunke	Separator.	Test.
350	Worthington	Worthington Creamery	Ind.	C. Baehler, Prop.	Worthington	C. Baehler	Separator.	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of receiving milk.
<i>Emmet County</i>								
881	Armstrong ...	Farmers' Creamery Co.	Co-op.	Peter H. Burt, Sec.	Armstrong ...	H. Chronholm.	Separator.	Test.
882	Dolliver ...	Dolliver Creamery Association.	Co-op.	L. P. Stillman, Secretary	Dolliver ...	Herman Wendt.	Separator.	Test.
883	Escherville ...	Escherville Creamery	Ind.	Joshua Morck, Prop.	Escherville ...	S. & G. C.	Separator.	Test.
884	Gruver ...	Gruver Co-op. Creamery Co.	Co-op.	C. E. Fuller, Sec.	Gruver ...	F. M. Goldsberry	Separator.	Test.
885	Halfa ...	Halfa Co-op. Creamery Co.	Co-op.	V. E. Yessler, Sec.	Halfa ...	E. A. Bacon	Separator.	Test.
886	Huntington ...	Huntington Co-op. Creamery	Co-op.	W. J. Weir, Sec.	Huntington ...	Ben Lanning	Separator.	Test.
887	Ringsied ...	Denmark Co-op. Creamery	Co-op.	Andrew Larsen, Sec.	Ringsied, Box 28	Peter Knudsen.	Separator.	Test.
888	Ringsied ...	Foreythe Creamery Co.	Co-op.	H. A. Gaarde, Sec.	Armstrong ...	Ed Kresdin.	Separator.	Test.
889	Ringsied ...	Farmers Hoprig Creamery	Co-op.	Jno. Morrill, Sec.	Hoprig ...	Julius Jensen	Separator.	Test.
890	Wallingford ...	Wallingford Creamery Co.	Stock.	O. O. Anderson, Sec.	Wallingford ...	J. C. Jensen	Separator.	Test.
891	Raleigh ...	Raleigh Creamery Co.	Co-op.	C. E. Hite, Sec.	Raleigh ...	August Nurell.	Separator.	Test.
<i>Fayette County</i>								
892	Alpha ...	Alpha Farmers' Creamery Co.	Co-op.	J. E. Hathaway, Sec.	Alpha ...	C. N. Beach.	Separator.	Test.
893	Arlington ...	Arlington Creamery	Stock.	Guy L. Rawson, Sec.	Arlington ...	Geo. Holsington.	Separator.	Test.
894	Clermont ...	Burr Oak Creamery	Co-op.	Henry Smith, Sec.	Clermont ...	B. C. Hill	S. & G. C.	Test.
895	Clermont ...	Clermont Valley Creamery Co.	Co-op.	M. F. Ferguson, Sec.	Clermont ...	Amos Erickson.	Separator.	Test.
896	Elgin ...	Elgin Farmer's Dairy Co.	Co-op.	M. J. Luchsing, Sec.	Elgin ...	Ed. Hanson	Separator.	Test.
897	Minkler ...	Oran Creamery Co.	Co-op.	J. P. Schmitt, Sec.	Minkler ...	G. K. Knud.	Separator.	Test.
898	Fayette ...	Farmers' Fayette Creamery Ass'n	Co-op.	Peter E. Jubb, Sec.	Fayette ...	G. H. Wilson	Separator.	Test.
899	Hawkeye ...	Hawkeye Creamery	Co-op.	J. Q. Adams, Sec.	Hawkeye ...	E. C. Billings	Separator.	Test.
900	Maynard ...	Maynard Creamery Co.	Co-op.	F. E. Bluthen, Sec.	Maynard ...	A. H. Ford.	Separator.	Test.
901	Oelwein ...	Jefferson Creamery	Co-op.	J. H. Meyer, Sec.	Oelwein ...	Joe Leck.	Separator.	Test.
902	Oelwein ...	Jefferson Farm Creamery Co.	Co-op.	E. E. Day, Sec.	Oelwein ...	Robt. Wagner.	Separator.	Test.
903	Randall ...	Randall Creamery Co.	Co-op.	R. A. Carr, Sec. and Mgr.	Randall ...	Franch Zbornik.	Separator.	Test.
904	Hawkeye ...	Richfield Creamery	Co-op.	F. Pleggenkulte, Sec.	Hawkeye R. F. ...	Franch Zbornik.	Separator.	Test.
905	Scott ...	Welch Bros. Creamery	Ind.	Welch Bros.	Scott ...	Math. H. Blong	Separator.	Test.
906	St. Lucas ...	The Far. Co-op. Cr. of St. Lucas	Co-op.	John J. Milner, Sec. & Mgr.	St. Lucas ...	R. E. White	Separator.	Test.
907	Sumner ...	Center Valley Creamery Co.	Stock.	A. E. Fridley, Sec. & Mgr.	Sumner ...	E. J. Schroeder.	Separator.	Test.
908	Wadena ...	Riverside Creamery	Ind.	F. J. Schrodler, Prop.	Wadena ...	E. J. Schroeder.	Separator.	Test.
909	West Union ...	West Union Creamery Co.	Co-op.	W. J. Johnson, Sec.	West Union ...	W. J. Johnson	Separator.	Test.
910	West Union ...	West Union Farmery Dairy Co.	Co-op.	Chas. L. Dwyer, Sec.	West Union ...	J. N. Gardner.	Separator.	Test.

Floyd County.									
382	Garny	Flood Creek Creamery Co.	Stock	M. A. Hirsch, Sec.	Charles City .....	.....	.....	G. C.	Inch.
383	Charles City	Charles City Creamery	Ind.	J. C. Daly, Prop.	Charles City	Fred Janes .....	.....	s. & G. C.	Test.
384	Niles	Niles Creamery	Ind.	J. J. Bremer	Niles .....	.....	.....	s. & G. C.	Test.
385	Powersville	Powersville Creamery	Ind.	Chas. Gurler & Co.	De Kalb, Ill.	W. H. Miller .....	.....	G. C.	Test.
386	Rockford	Rockford Co-op. Dairy Ass'n.	Co-op.	E. R. Franklin, Mgr.	Rockford	J. C. Farham .....	.....	G. C.	Test.
387	Nora Springs	Nora Springs Creamery	Stock	E. Pufahl, Sec. & Mgr.	Nora Springs	E. Pufahl .....	.....	G. C.	Test.
388	Charles City	St. Charles Creamery	Ind.	W. W. Day	Charles City	W. W. Day .....	.....	G. C.	Test.
Franklin County.									
389	Ackley	Edna Creamery	Ind.	Martin Johnson & Co.	Ackley	Chas. Strassburg .....	.....	Separator.	Test.
390	Alexander	Alexander Creamery	Ind.	G. H. Gurler	De Kalb, Ill.	H. K. Kiepert .....	.....	Separator.	Test.
391	Lee Center	Alden Co-op. Creamery Co. (s) ..	Stock	N. J. Wheeler	Alden .....	.....	.....	Separator.	Test.
392	Chapin	Chapin Creamery	Ind.	G. H. Gurler	De Kalb, Ill.	R. E. Shockey .....	.....	s. & G. C.	Test.
393	Dows	Farmers' Co-op. Creamery Co.	Co-op.	C. A. Nicholson, Sec.	Dows	Frank Larson .....	.....	Separator.	Test.
394	Faulkner	Edna Creamery (s)	Ind.	Martin Johnson Co.	Ackley .....	.....	.....	Separator.	Test.
395	Hampton	Hampton Creamery	Ind.	J. Juhl, Prop.	Hampton	Jake Juhl .....	.....	G. C.	In. & T.
396	Latimer	Latimer Co-op. Creamery	Co-op.	Fred Dohrmann, Sec.	Latimer	L. C. Cochran .....	.....	Separator.	Test.
397	Coulter	Hamilton Co-op. Creamery Co.	Co-op.	G. H. Gurler	De Kalb, Ill.	Geo. Jorgenson .....	.....	Separator.	Test.
398	Sheffield	Chapin Creamery (s)	Ind.	J. J. Hensing, Sec.	Iowa Falls, R. ....	.....	.....	s. & G. C.	Test.
399	Iowa Falls	Grant Center Creamery Co.	Co-op. ....	.....	No. 1	Ira O'Neil .....	.....	Separator.	Test.
400	Popejoy	Popejoy Creamery	Ind.	W. J. Kicks Co.	Popejoy .....	.....	.....	G. C.	Test.
Fremont County.									
401	Hamburg	Hamburg Creamery	Co-op.	O. E. Redshaw	Hamburg	J. G. Wheelock .....	.....	Separator.	Test.
Greene County.									
402	Churdan	Andrew Wood & Co. (s)	Ind.	Andrew Wood & Co.	Rockwell City .....	.....	.....	Separator.	Test.
403	Jefferson	Andrew Wood & Co. (s)	Ind.	L. F. Hillman, Sec.	Rockwell City .....	.....	.....	Separator.	Test.
404	Grand Junction	Grand Junction Creamery	Co-op.	Geo. E. White, Prop. & Mgr.	Grand Junction	Warren Adams .....	.....	Separator.	Test.
405	Paton	Paton Creamery	Ind.	T. Lewis-A. E. Adams	Paton	Ralph White .....	.....	Separator.	Test.
406	Seranton	Seranton Creamery	Ind. ....	.....	Seranton	A. E. Adams .....	.....	Separator.	Test.
407	Coon Rapids	Coon Rapids Creamery (s)	Ind.	H. L. Feist, Prop.	Coon Rapids .....	.....	.....	Separator.	Test.
Grundy County.									
408	Johnson	Robertson Creamery (s)	Ind.	Martin Johnson Company	Ackley .....	.....	.....	Separator.	Test.
409	Applington	Buck's Grove Creamery Co.	Co-op.	O. Nielson	Wellsburg, R. ....	.....	.....	Separator.	Test.
410	Beaman	Beaman Creamery	Ind.	P. McNelly, Prop.	Beaman	W. J. Dilger .....	.....	Separator.	Test.
411	Dike	Dike Creamery	Stock	Hale & Wild	R. D. No. 1	P. McNelly .....	.....	Separator.	Test.
412	Fredsville	Fredsville Co-op. Creamery Co.	Co-op.	Erick Peterson	Cedar Falls	S. E. Edwards .....	.....	s. & G. C.	Test.
413	Grundy Center	Boies City Creamery	Ind.	Schrieber & Merrick	R. D. No. 8	Jens Christensen .....	.....	Separator.	Test.
414	Grundy Center	J. H. Sperry Creamery	Ind.	J. H. Sperry	Reinbeck	Alfred Kindberg .....	.....	Separator.	Test.
					Grundy Center	A. Baughman .....	.....	s. & G. C.	T. & I.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of receiving milk.
415	Holland	J. H. Sperry Creamery (s).	Ind.	J. H. Sperry.	Grundy Center.	Peter Larsen.	S. & G. C.	T. & I.
416	Holland	Holland Creamery	Ind.	J. H. Sperry.	Grundy Center.	George Graham.	S. & G. C.	Test.
417	New Hartford	Fairbanch Co-op. Creamery Co..	Co-op.	Ira J. Wilson, Sec.	Cedar Falls, R. F. D. No. 8	Wm. Kliner.	Separator.	Test.
418	Reinbeck	Schreiber & Merrick	Ind.	Schreiber & Merrick	Reinbeck	W. E. Dilger.	Separators.	Test.
419	Stout	Beaver Center Creamery Co	Co-op.	Jacob A. Meyer, Sec.	Stout	Henry Suur.	Separator.	Test.
420	Wellsburg	Wellsburg Farmers Creamery Co	Stock.	H. L. Meyer, Sec.	Wellsburg.			
	Grundy County.							
421	Zaneta	Zaneta Creamery Association....	Co-op.	Geo. C. Terral	Zaneta	Wm. McFarlane.	Separator.	Test.
	Guthrie County							
422	Bagley	Yale Creamery (s)	Ind.	Park & Son	Yale		Separator.	Test.
423	Casby	Casby Creamery Co.	Co-op.	O. C. Jones, Sec.	Casby	F. W. Sargent.	Separator.	Test.
424	North Adair	Eight Creamery Co. (s)	Ind.	O. S. Adams	Chicago, Ill.		Separator.	Test.
425	Dale City	Nelmska & Iowa Creamery Co(s)	Stock.	John J. King, Sec.	Omaha, Neb.	Joseph Girard	Separator.	Test.
426	Glendon	Glendon Creamery Co.	Co-op.	J. D. Hansen, Sec.	Glendon		Separator.	Test.
427	Guthrie Center	Hygeia Creamery (s)	Ind.	E. C. Sharpe, Mgr	Guthrie Center		Separator.	Test.
428	Menlo	Menlo Creamery Co.	Stock.	A. C. Curtis	Adair	H. H. Colbert	Separator.	Test.
429	Monteath	Nelmska & Iowa Creamery Co(s)	Ind.	John J. King	Omaha		Separator.	Test.
430	Casby	Elgin Creamery Co. (s)	Ind.	O. S. Adams	Chicago, Ill.		Separator.	Test.
431	North Branch	Nelmska & Iowa Creamery Co(s)	Ind.	John J. King	Omaha, Neb.	John Tuff	Separator.	Test.
432	Panora	Panora Creamery Creamery Co(s)	Ind.	F. F. Wilcox	Panora, Neb.		Separator.	Test.
433	Safedale	Nelmska & Iowa Creamery Co.	Ind.	John I. King	Omaha, Neb.		Separator.	Test.
434	Stuart	Stuart Co-op. Creamery Co.	Co-op.	O. M. O'Leary	Stuart	A. Cochran.	Separator.	Test.
435	Wichita	Yale Creamery	Stock.	John S. King	Omaha, Neb.		Separator.	Test.
436	Yale	Yale Creamery	Ind.	Park & Son	Yale	D. C. Barthlow	Separator.	Test.
437	Bayard	Bayard Creamery	Ind.	C. J. Wurtz, Prop.	Bayard	M. J. Goodnow.	S. & G. C.	Test.
438	Guthrie Center	Guthrie Center Co-op. Cr'y. Co	Co-op.	M. O. Moore, Sec.	Guthrie Center	J. L. Clark	Separator.	Test.
	Hamilton County.							
439	Blairburg	Blairburg Creamery	Ind.	P. E. Saxor, Prop.	Blairburg	P. E. Saxor	Separator	Test.
440	Rose Grove	Ellsworth Co-op. Cr'y Ass'n (s).	Co-op.	J. Sternburg, Sec.	Ellsworth		Separator.	Test.

441	Ellsworth	Ellsworth Co-op. Creamery Ass'n	Co-op.	S. Sternburg, Sec	Elk-worth	M. J. Mansager	Separator.	Test.
442	Jewell	Jewell Creamery	Ind.	H. K. Gronbeck, Prop	Jewell	H. K. Gronbeck	Separator.	Test.
443	Radcliffe	Lincoln Co-op. Creamery	Co-op.	W. M. Willis, Sec	Radcliffe	M. A. Mason	Separator.	Test.
444	Radcliff	Randall Farmers' Creamery Co.	Co-op.	H. N. Miller, Sec	Randall	H. N. Miller	Separator.	Test.
445	Stratford	McKay Soenke & Co	Ind.	S. O. Rice, Mgr	Stratford	S. O. Rice	Separator.	Test.
446	Webster City	Ellingson, Mathre & Co.	Stock	Ellingson, Mathre & Co.	Webster City	John Soren	G. C	Test.
447	Webster City	Prairie Queen Creamery	Stock	H. E. Ford, Sec	Webster City	H. E. Ford	Separator	Test.
448	Williams	Payne's Model	Ind.	F. R. Payne, Prop	Williams	Wm. Evans	Separator	Test.
449	Wilke	Wilke, Soenke & McKay Cr'y Co.	Ind.	Wilke, Soenke & McKay	Wilke		Separator.	Test.
<i>Hancock Coun</i>								
450	Britt	Britt Co-op. Creamery Co.	Co-op.	John Flisk, Sec	Britt	H. L. McNary	Separator.	Test.
451	Crystal Lake	Crystal Lake Creamery Co	Co-op.	J. C. Nelson, Sec	Britt, Route 8	L. A. Nelson	S. G. C.	Test.
452	Duncan	Duncan Co-op. Creamery Ass'n	Co-op.	Frank Formannek, Sec	Duncan	Ant'm. Doloschal	Separator.	Test.
453	Miller	Model Co-op. Dairy Ass'n	Co-op.	J. Isaacson, Mgr & Sec	Forest City, R. No. 2	A. G. Paulson	Separator.	Test.
454	Hayfield	Forest City Co-op. Creamery (s)	Co-op.	P. N. Anderson, Sec	Forest City	C. R. Conway	Separator.	Test.
455	Garner	Concord Creamery	Co-op.	J. Kiesel, Sec	Garner	J. D. Gift	Separator.	Test.
456	Madison	Forest City Co-op. Creamery (s)	Co-op.	P. N. Anderson, Sec	Forest City	Miron Haskin	Separator.	Test.
457	Kanawha	Kanawha Creamery	Ind.	G. H. Gurler, Prop	De Kalb, Ill		G. C.	Test.
458	Klemme	Klemme Creamery Co.	Co-op.	Louis Sampson	Klemme		G. C.	Test.
459	Miller	Model Co-op. Dairy Ass'n	Co-op.	J. Isaacson, Mgr. & Sec	Forest City, R. No. 2		In. & T	Test.
460	Woden	Woden Creamery	Ind.	L. C. Peterson, Prop	Woden	L. C. Peterson	Separator.	Test.
461	Garner	Garner Creamery	Ind.	H. C. Shultz, Prop	Garner	C. D. Driver	Separator.	Test.
<i>Hardin Coun</i>								
462	Alden	Alden Co-op. Creamery Co.	Stock	N. J. Wheeler, Mgr	Alden	N. H. Trimble	Separator.	Test.
463	Buckeye	Cottage Creamery Co.	Co-op	Carl F. Sclott, Sec	Buckeye	Geo. H. Whitney	Separator.	Test.
464	Cleves	Cleves Creamery	Ind.	Martin, Johnson Co.	Ackley	W. F. Giner	Separator.	Test.
465	Hubbard	Hubbard Co-op. Creamery Co.	Co-op	Ernest Hilker, Sec	Hubbard	J. W. Mohler	S. & G. C.	Test.
466	Eldora	The Eldora Creamery	Ind	Peter Jensen, Prop	Eldora	Peter Jensen	Separator.	Test.
467	Steamboat Rock	Steamboat Rock Creamery Co.	Co-op	E. Christians	Steamboat Rock	Walter Peterson	Separator.	Test.
468	Hubbard	Spring Branch Co-op. Creamery	Co-op	J. E. Poniley, Sec	Hubbard	R. Nelson	Separator.	Test.
469	Iowa Falls	Iowa Falls Creamery Co	Co-op	G. L. Whinery, Sec	Iowa Falls	C. W. Calkins	Separator.	Test.
470	New Providence	New Providence Creamery Co.	Stock	W. T. Kersy, Sec	New Providence	Chas N. Hart	Separator.	Test.
471	Owasa	Owasa Creamery	Stock	A. M. Chamberlin	Waterloo	Gus Kruempel	Separator.	Test.
472	Radcliffe	Concord & Scott Co-op. Cr'y Co.	Co-op	Oscar Sampson	Radcliffe	H. R. Alcorn	Separator.	Test.
473	Garden City	Concord & Scott Co-op. Cr'y Co. (s)	Co-op	Martin Johnson & Co	Ackley	A. D. Giner	Separator.	Test.
474	Robertson	Robertson Creamery	Ind	O. W. Dillon, Sec. and Mgr.	Union	O. W. Dillon	S. & G. C.	Test.
475	Union	Union Creamery	Co-op	Henry Dieckman	Hubbard	H. Dieckman	Separator.	Test.
476	Radcliffe	Buckeye Creamery	Stock	N. J. Wheeler	Alden		Separator.	Test.
477	Buckeye	Buckeye Co-op. Creamery Co.	Stock	Ernest Wilkner, Sec	Hubbard		Separator.	Test.
478	Hubbard	Hubbard Co-op. Creamery (s)	Co-op				Separator.	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of recel-ing milk.
<i>Harrison County.</i>								
479	Beebeetown.	E. B. Ryan	Ind.	E. B. Ryan	Nicola .....	.....	Separator.	Test.
480	Dunlap	Dunlap Co-op. Butter and Cheese Co.	Co-op ..	H. B. Peters, Sec	Dunlap	Albert Mondt	S. & G. C. Separator.	Test.
481	Magnolia	Magnolia Creamery Co	Co-op ..	F. H. Cadwell, Sec	Logan	G. F. Scott	Separator.	Test.
482	Missouri Valley.	Missouri Valley Butter and Cheese Co	Ind.	N. H. Tellmann, Prop	Missouri Valley	Mrs. Tellmann	Separator.	Test.
483	Crisp	Crisp Co-op. Creamery Co	Co-op ..	E. E. Harris, Mgr	Logan	Niles Danielson	Separator.	Test.
<i>Henry County.</i>								
484	Noble.	Christner B. & C. Factory	Ind.	G. C. Christner Prop	Noble	C. C. Christner	Separator.	Test.
485	St. Paul	Fette's Separator Creamery	Ind.	Ed. Fette	Salem	Henry Fette	Separator.	Test.
486	Salem	Farmers' Co-op Mutual Ass'n	Stock ..	Louis Nielson, Sec. & Mgr ..	Box 75, Salem ..	Louis Nielson	Separator.	Test.
<i>Howard County.</i>								
487	Bonair	Bonair Creamery	Stock ..	A. O. Elvidge	Elkader	J. J. Boland	G. C.	Test.
488	Chester	Farmers' Co-op. Creamery Co	Co-op ..	M. Leslie, Pres.	Chester	E. A. Hoopman	G. C.	Test.
489	Cresco	Cresco Creamery	Ind.	Geo. Bolman, Prop	Cresco	Geo. Bolman	S. & G. C. Separator.	Test.
490	Elma	Elma Co-op. Creamery Co	Co-op ..	Daniel Fellgather, Sec. & Mgr ..	Elma	Ben H. Arnese	G. C.	Test.
491	Lime Springs	Lime Springs Creamery	Stock ..	A. O. Elvidge	Elkader	John Foss	G. C.	Test.
492	Lourdes	Lourdes Creamery	Stock ..	A. O. Elvidge	Elkader .....	.....	G. C.	Test.
493	Elma	Maple Leaf Co-op. Creamery Co ..	Co-op ..	John Leuck, Sec.	Maple Leaf	G. W. Hatch	Separator.	Test.
494	Elma	Protein Creamery Association	Co-op ..	J. A. Dostal, Sec	Protein	J. A. Dostal	G. C.	Test.
495	Protein	Saratoga Creamery	Stock ..	A. O. Elvidge	Elkader	S. G. Twomly	G. C.	Test.
496	Saratoga	Schley Creamery	Ind.	F. Pechovsky, Mgr. & Prop ..	Schley	F. Pechovsky	Separator.	Test.
497	Schley	Schley Creamery	Ind.	F. Pechovsky, Mgr. & Prop ..	Schley	F. Pechovsky	Separator.	Test.
<i>Humbolt County.</i>								
497	Arnold	Grove Co-op. Creamery Co	Co-op ..	Chas. J. Nelson, Sec	Arnold	John Schultz	Separator.	Test.
498	Bode	Bode Creamery Ass'n	Co-op ..	C. A. Rowling, Sec	Bode	M. H. Roaring	Separator.	Test.
499	Bradgate	Bradgate Co-op. Creamery Co	Co-op ..	J. L. Van Horn, Sec. & Mgr ..	Bradgate	H. B. Phelps	Separator.	Test.
500	Hardy	Hardy Co-op. Creamery	Co-op ..	A. N. Clancy, Sec.	Hardy	E. K. Junkins	Separator.	Test.
501	Humbolt	Humbolt Creamery Co	Co-op ..	G. L. Orukshank, Sec. & Mgr ..	Humbolt	E. D. Hill	Separator.	Test.

522	Ottosen.....	Waconia Creamery Ass'n.....	Co-op.....	L. J. Clare.....	Ottosen.....	J. J. Thurson.....	Separator.....	Test.....
523	Owl Lake.....	Farmers Mutual Co-op. Cr'y Ass'n.....	Co-op.....	L. M. Michelson, Sec.....	Owl Lake.....	Lewis Tyrer.....	Separator.....	Test.....
524	Pioneer.....	Pioneer Creamery Co.....	Stock.....	J. F. Wittman, Sec.....	Pioneer.....	E. J. Hall.....	Separator.....	Test.....
525	Renwick.....	Renwick Creamery Co.....	Co-op.....	Aug. Griebel, Sec. and Mgr.....	Renwick.....	W. G. Stultzbach.....	S. & G. C.....	Test.....
526	Rutland.....	Rutland Creamery Ass'n.....	Co-op.....	S. S. Bartley, Sec.....	Rutland.....	T. M. Borglum.....	Separator.....	Test.....
527	Thor.....	Clover Creamery.....	Stock.....	Lewis Olson, Sec.....	Thor.....	P. O. Knutson.....	Separator.....	Test.....
528	Gilmore City.....	Gilmore City Creamery.....	Ind.....	A. A. Briggs, Prop.....	Gilmore City.....	A. A. Briggs.....	Separator.....	Test.....
<i>Ida County</i>								
529	Arthur.....	Arthur Creamery.....	Ind.....	M. J. Concklin.....	Arthur.....	M. J. Concklin.....	Separator.....	Test.....
530	Galva.....	Hopkins & Hubbard Creamery.....	Stock.....	Hopkins & Hubbard.....	Holstein.....	Chas. A. Watson.....	Separator.....	Test.....
531	Holstein.....	Holstein Creamery.....	Ind.....	Hopkins & Hubbard.....	Holstein.....	Wm. O. Bradley.....	S. & G. C.....	Test.....
<i>Iowa County</i>								
532	Conroy.....	Slimer Creamery Co.....	Co-op.....	S. H. Stoner, Sec.....	Conroy.....	W. F. Reid.....	Separator.....	Test.....
533	Genoa Bluff.....	Genoa Bluff Creamery.....	Co-op.....	Geo. R. Howard, Sec.....	Genoa Bluff.....	Geo. P. Bryne.....	S. & G. C.....	Test.....
534	North English.....	North English Creamery.....	Ind.....	L. E. Mathew, Mgr.....	North English.....	S. P. Chiles.....	Separator.....	Test.....
535	Ladora.....	Ladora Creamery Co.....	Co-op.....	L. W. Wil on, Sec.....	Ladora.....	Jno. Balfinger.....	Separator.....	Test.....
536	Marengo.....	Marengo English Creamery (s).....	Ind.....	Shipton & Vette.....	Marengo.....	N. D. Sutherand.....	G. C.....	Test.....
537	Green Center.....	Green Center Creamery.....	Ind.....	L. E. Mathew, Prop.....	Green Center.....	J. Gould.....	Separator.....	Test.....
538	Victor.....	Victor Creamery (s).....	Ind.....	H. C. Falver.....	Victor.....	E. E. Montgomery.....	S. & G. C.....	Test.....
539	Victor.....	Troy Creamery.....	Ind.....	Geo. C. House, Sec.....	Victor.....	Theo. Winter.....	S. & G. C.....	Test.....
540	Williamsburg.....	Troy Creamery (s).....	Co-op.....	Geo. C. House, Sec.....	Williamsburg.....	Geo. Strait.....	Separator.....	Test.....
541	Williamsburg.....	York Creamery.....	Co-op.....	H. W. Huedepohl.....	Williamsburg.....		Separator.....	Test.....
542	Williamsburg.....	York Creamery (s).....	Co-op.....	S. M. Heck.....	Williamsburg.....		Separator.....	Test.....
543	Marengo.....	Marengo F. M. Co-op. Cr'y Ass'n.....	Co-op.....		Marengo.....		Separator.....	Test.....
<i>Jackson County</i>								
544	Andrew.....	Andrew Lilly Creamery.....	Ind.....	Henry Fligel.....	Andrew.....	Louis H. Fligel.....	Separator.....	Test.....
545	Baldwin No. 27.....	Diamond Creamery Co. (s).....	Ind.....	Diamond Creamery Co.....	Monticello.....	Geo. Wadler.....	Separator.....	Test.....
546	Springbrook.....	Springbrook Creamery.....	Ind.....	W. Brady & Son.....	Springbrook.....	Henry Brady.....	S. & G. C.....	Test.....
547	Monmouth.....	Monmouth Creamery.....	Ind.....	John Huddle.....	Monmouth.....	Scott Wylie.....	Separator.....	Test.....
548	Monmouth.....	Monmouth Creamery (s).....	Ind.....	W. Brady & Son.....	Monmouth.....	J. C. Nemmers.....	Separator.....	Test.....
549	Monmouth.....	Monmouth Creamery (s).....	Ind.....	N. B. Nemmers.....	Monmouth.....		S. & G. C.....	Test.....
550	Lanotte.....	Lanotte Creamery (s).....	Ind.....	N. B. Nemmers.....	Lanotte.....		S. & G. C.....	Test.....
551	Lanotte.....	Lanotte Creamery (s).....	Ind.....	N. B. Nemmers.....	Lanotte.....		S. & G. C.....	Test.....
552	Lanotte.....	Sterling Separator Creamery.....	Ind.....	N. B. Nemmers.....	Lanotte.....		S. & G. C.....	Test.....
553	Lanotte.....	Sterling Separator Creamery.....	Ind.....	N. B. Nemmers.....	Lanotte.....		S. & G. C.....	Test.....
554	Maquoketa.....	Maquoketa Creamery.....	Co-op.....	W. M. Mill T, Sec.....	Maquoketa.....	John M. Hoffman.....	Separator.....	Test.....
555	Miles.....	Springbrook Creamery.....	Ind.....	John Newman Co.....	Maquoketa.....	H. P. Bancroft.....	Separator.....	Test.....
556	Monmouth.....	Monmouth Creamery (s).....	Ind.....	W. Brady & Son.....	Maquoketa.....	Thos. Pope.....	Separator.....	Test.....
557	Otter Creek.....	Otter Creek Creamery.....	Ind.....	Ladillo Bros.....	Monmouth.....		Separator.....	Test.....
558	Preston.....	Preston Creamery Ass'n.....	Co-op.....	Samuel McNeil, Sec.....	Otter Creek.....	Geo. Turner.....	Separator.....	Test.....
559	Springbrook.....	Springbrook Creamery.....	Ind.....	John Newman Co.....	Preston.....	G. W. Clark.....	Separator.....	Test.....
560	Springbrook.....	Springbrook Creamery (s).....	Ind.....	John Newman Co.....	Elgin, Ill.....	A. J. Negus.....	Separator.....	Test.....
561	Springbrook.....	Springbrook Creamery (s).....	Ind.....	Krider & Dupont.....	Springville.....		Separator.....	Test.....
562	Springbrook.....	Springbrook Creamery (s).....	Ind.....	John Newman Co.....	St. Donatus.....	R. J. Dupont.....	Separator.....	Test.....
563	Springbrook.....	Springbrook Creamery (s).....	Ind.....	John Newman Co.....	Elgin, Ill.....		Separator.....	Test.....

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of receiving milk.
542	Preston	Preston Creamery Ass'n (s)	Co-op	Samuel McNeil, Sec.	Preston	C. E. Lilias	Separator.	Test.
543	Maquoketa	Springbrook Creamery	Ind.	John Newman Co.	Elgin, Ill.		Separator.	Test.
	<i>Jasper County</i>							
544	Baxter	Baxter Dairy Co.	Co-op	H. Krampe, Jr., Sec.	Baxter	A. E. McClune	Separator	Test.
545	Kellogg	Kellogg Creamery	Ind.	H. F. Pierce	Kellogg	H. F. Pierce	G. C.	Test.
546	Monroe	Monroe Creamery	Ind.	M. L. Chase	Monroe	John Murray	Separator.	Test.
547	Newburg	Newburg Creamery Co.	Stock	G. D. Alden, Sec.	Newburg	H. E. Webb	Separator.	Test.
548	Ira	Ira Creamery	Ind.	N. W. Mass	Ira	J. C. Grey	S. & G. C.	Test.
549	Reasoner	Reasoner Dairy Co.	Stock	R. B. Trout, Pres.	Reasoner	T. E. Bean	Separator.	Test.
550	Sully	Sully Creamery Co.	Co-op	L. Reerink	Sully	C. C. Bomberger	Separator.	Test.
551	Turner	J. W. Fowler (s)	Ind.	J. W. Fowler	Grinnell		Separator.	Test.
	<i>Jefferson County</i>							
552	Fairfield	Fairfield Creamery	Stock	H. A. Hoopes, Mgr.	Fairfield	G. V. Ross	S. & G. C.	Test.
553	Four Corners	Four Corners Creamery	Co-op	E. E. Colce, Mgr. and Sec.	Four Corners	E. E. Colce	Separator.	Test.
554	Germanville	The Germanville Creamery Ass'n	Stock	Wm. Strz, Mgr.	Germanville	Geo. W. Badinger	Separator.	Test.
555	Lockridge	Lockridge Creamery	Ind.	W. C. Bauescher, Sec.	Lockridge	Geo. Hanson	Separator.	Test.
556	Salina	Salina Creamery	Co-op	J. Schillersstrom, Sec.	Salina	Henry Goers	Separator.	Test.
	<i>Johnson County</i>							
557	Hills	Hills Siding Creamery Co.	Co-op	F. C. Hirt	Hills	G. Wright	G. C.	Test.
558	Lone Tree	Hildebrand Creamery	Ind.	E. Hildebrand	Lone Tree	C. L. McComas	G. C.	Test.
559	Oxford	Estella Creamery	Ind.	H. C. Brown	Oxford	Harry Ambler	G. C.	Test.
	<i>Jones County</i>							
560	Amber	Amber Creamery	Ind.	James P. Younger	Freeport, Ill.	Wm. Gehlhart	Separator.	Test.
561	Amber	Hazel Green	Ind.	E. E. Snyder, Prop.	Olin	E. E. Glick	Separator.	Test.
562	Amber	Jackson Creamery	Ind.	James P. Younger	Freeport, Ill.	H. H. Sargent	Separator.	Test.
563	Anamosa	Class Center Creamery	Ind.	Geo. Benton	Anamosa	Geo. Benton	Separator.	Test.
564	Anamosa	Pawn Creek Creamery	Ind.	J. S. Condit	Anamosa	W. D. Romine	Separator.	Test.
565	Center Junction	Center Junction	Ind.	J. P. Younger	Freeport, Ill.	A. E. Robertson	Separator.	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of recov- ing milk.
607	Lu Verne	Lu Verne Co-op. Creamery Ass'n.	Co-op.	Alex McLaughlin, Sec.	Lu Verne	Geo L. Minkler . .	Separator.	Test.
608	Seneca	Seneca Co-op. Creamery Co.	Co-op.	W. W. Alcorn, Sec.	Seneca	August Johnson . .	Separator.	Test.
609	Sexton	Sexton Co-op. Creamery Co.	Co-op.	B. O. Bromley, Mgr.	Sexton	B. O. Brownlee . .	Separator.	Test.
610	St. Benedict	St. Benedict Co-op. Creamery Co.	Co-op.	Frank Van Erwyk, Sec	St. Benedict . . .	Hugh F. Jones . . .	Separator.	Test.
611	St. Joseph	St. Joseph Co-op. Creamery Co.	Co-op.	P. Klein, Sec. and Mgr	St. Joseph	Gilbert Gray . . .	Separator.	Test.
612	Swea City	Swea City Co-op. Creamery Co.	Co-op.	Olaf Pearson, Sec.	Swea City	Chris. Morck . . .	Separator.	Test.
613	Ticonka	Woden Creamery (s).	Ind.	L. C. Peterson . . .	Woden	Chris. Morck . . .	Separator.	Test.
614	Ticonka	German Valley Co-op. Creamery	Co-op.	Herman Nelson, Sec	Ticonka	N. E. Hanson . . .	Separator.	Test.
615	Wesley	Wesley Co-op. Creamery Co.	Co-op.	P. E. Skow, Sec.	Wesley	Christian Bogh . .	Separator.	Test.
616	West Bend	Garfield Creamery	Co-op.	L. C. Dorweller, Sec	West Bend	W. H. Cutchaw . .	Separator.	Test.
617	Whittemore	Lotta Creek Co-op. Creamery.	Co-op.	Aug. Boettcher, Sec.	Lo ta Creek . . .	M. J. Deyer . . .	Separator.	Test.
618	Whittemore	Whittemore Creamery Co.	Co-op.	Thos. Carmody, Sec.	Whittemore . . .	Edward Walsh . . .	Separator.	Test.
<i>Linn County.</i>								
619	Anamosa	Rirk Creamery	Ind.	L. P. Minnehart . .	Anamosa	C. E. Minnehart . .	Separator.	Hd.
620	Alburnet	Alburnet Creamery	Ind.	Henderson & Sawyer	Central City . . .	W. C. Dubbe . . .	Separator.	Test.
621	Cedar Rapids	Cedar Valley Creamery	Stock.	G. L. Hubbard, Sec. & G. M.	Cedar Rapids . .	G. L. Hubbard . . .	Separator.	Hd.
622	Center Point	Center Point Creamery	Ind.	L. W. Durlinger . .	Center Point . . .	John Durlinger . .	Separator.	Test.
623	Central City	Central City Creamery	Ind.	W. W. Sawyer & Henderson	Central City . . .	P. W. Sawyer . . .	Separator.	Test.
624	Ross Creamery	Ross Creamery	Ind.	W. W. Ross, Prop.	Central City . . .	W. W. Ross . . .	Separator.	Hd.
625	Valley Farm Creamery	Valley Farm Creamery	Ind.	P. G. Henderson . .	Central City . . .	St. Elmo Wright . .	Separator.	Test.
626	Oggon	Oggon Creamery	Ind.	Fred Lehman, Prop.	Route 8	Fred Lehman . . .	Separator.	Test.
627	Oggon	North Side Creamery	Co-op.	G. L. Johnson, Sec.	Oggon	Chas. Naylor . . .	Separator.	Test.
628	Oggon	Clear Valley Creamery. (s)	Stock.	G. L. Hubbard, Sec. & G. M.	Coggon	Chas. Naylor . . .	Separator.	Test.
629	Wagon	Wagon & Western Creamery.	Co-op.	Frank J. Dollal, Sec.	Edly	F. J. Adkins . . .	Separator.	Hd.
630	Wagon	Clear Valley Creamery (s).	Stock.	H. L. Hubbard, Sec. & G. M.	Edly	F. J. Adkins . . .	Separator.	Test.
631	Mt. Vernon	Mt. Vernon Creamery	Ind.	H. F. Boyer . . .	Edgewood	Frank Sherman . .	Separator.	Test.
632	Prairieburg	Diamond Creamery Co. (s).	Ind.	Simpson McEl. & Co	Boston, Mass . .	Frank Sherman . .	Separator.	Test.
633	Prairieburg	Matell Creamery	Ind.	Minnehart & Cook . .	Frairieburg . . .	L. E. Minnehart . .	Separator.	Test.
634	Prairieburg	Matell Creamery	Ind.	Minnehart & Spitzer Bros	Frairieburg . . .	A. L. Minnehart . .	Separator.	Test.
635	Springville	Springville Creamery	Ind.	C. M. Flach, Mgr.	Springville	Charles R. Flach . .	Separator.	Hd.
636	Springville	Monroe Creamery	Ind.	C. M. Flach, Mgr.	Springville	Charles R. Flach . .	Separator.	Hd.
637	Toddville	Highland Creamery	Ind.	John Lehl, Sec. & Mgr	Toddville	G. B. Bachholder . .	Separator.	Hd.
638	Troy Mills	Troy Mills Creamery Co.	Co-op.	J. M. Tupper, Mgr	Walker	G. B. Bachholder . .	Separator.	Hd.
639	Troy Mills	Troy Mills Creamery	Ind.	J. M. Tupper, Mgr	Troy Mills	J. M. Tupper . . .	Separator.	Hd.

639	Viola	Viola Creamery	Ind.	C. N. Pollock	C. N. Pollock	Viola	C. N. Pollock	Separator.	Test.
640	Walker	Walker Creamery	Ind.	H. J. Nietert	H. J. Nietert	Walker	S. W. Laird	Separator.	Test.
641	Waubesa	Waubesa Creamery	Ind.	Bates & Hemenway, Prop.	Bates & Hemenway, Prop.	Waubesa	H. E. Hemenway	Separator.	Hd.
642	Western College	Ely & Western Creamery (s)	Co-op.	Frank J. Dolzal, Sec.	Frank J. Dolzal, Sec.	Ely .....	.....	Separator.	Test.
643	Paralta	Springville Creamery (s)	Ind.	Batchelder Bros.	Batchelder Bros.	Springville .....	.....	Separator.	Test.
<i>Louisa County.</i>									
644	Fredonia	Fredonia Creamery	Ind.	Thomas Carey	Thomas Carey	Fredonia	E. W. Kelley	G. C.	Test.
645	Letta	Letta Creamery	Ind.	J. M. Hildebrand	J. M. Hildebrand	Letta	J. M. Hildebrand	G. C.	Inch.
<i>Lucas County.</i>									
646	Derby	Old Colony Creamery (s)	Ind.	T. G. Hyde, Mgr.	T. G. Hyde, Mgr.	Humeston	W. J. Marshall	Separator.	Test.
647	Russell	Russell Creamery Co.	Ind.	W. J. Marshall, Sec.	W. J. Marshall, Sec.	Russell .....	.....	Separator.	Test.
<i>Lyon County.</i>									
648	George	George Creamery	Ind.	H. J. Turner	H. J. Turner	George	W. J. Becker	Separator.	Test.
649	Inwood	Inwood Creamery Co.	Ind.	A. Nordmark, Prop.	A. Nordmark, Prop.	Inwood	A. Nordmark	S. & G. C.	Test.
650	Larchwood	Larchwood Creamery	Ind.	M. M. Lewis	M. M. Lewis	Larchwood	M. M. Lewis	Separator.	Test.
651	Lester	Lester Co-op. Creamery Co.	Co-op.	L. W. Billings	L. W. Billings	Lester	L. W. Billings	Separator.	Hd.
652	Rock Rapids	Home Lawn Creamery	Ind.	H. E. Morrow	H. E. Morrow	Rock Rapids	H. E. Morrow	Separator.	Test.
653	Little Rock	Little Rock Creamery Co.	Co-op.	R. E. Struzel	R. E. Struzel	Little Rock	J. Dabbs	Separator.	Test.
<i>Nebraska.</i>									
654	New Sharon	New Sharon Creamery Co.	Stock.	W. J. Nicholson, Sec.	W. J. Nicholson, Sec.	New Sharon	John Roberts	G. C.	Inch.
655	Peoria	Peoria Creamery Co.	Co-op.	W. S. Lindale, Sec.	W. S. Lindale, Sec.	Peoria	A. U. McLaren	Separator.	Test.
<i>Marion County.</i>									
656	Pella	Pella Creamery	Ind.	J. J. Bousquet, Prop.	J. J. Bousquet, Prop.	Pella	F. Smorenburg	G. C.	Inch.
657	Pleasantville	Waterloo Creamery Co. (s)	Stock.	Bert B. Corlies	Bert B. Corlies	Des Moines .....	.....	Separator.	Test.
<i>Marshall County.</i>									
658	Clemens	Minerva Valley Creamery Co.	Co-op.	A. D. McCormack, Sec.	A. D. McCormack, Sec.	Clemens	W. S. Cousins	G. C.	Inch.
659	Dunbar	Dunbar Creamery Co.	Co-op.	O. J. Olson, Sec.	O. J. Olson, Sec.	Dunbar	C. E. McIntire	Separator.	Test.
660	Haverhill	Columbia Creamery	Co-op.	Jacob Friedman, Sec.	Jacob Friedman, Sec.	Haverhill	Co. Stamen	Separator.	Test.
661	Laurel	Laurel Co-op. Creamery	Co-op.	H. Cavell, Sec.	H. Cavell, Sec.	Laurel	R. M. Dowden	Separator.	Test.
662	Liscomb	Liscomb Cheese Co.	Stock.	Thos. E. Culp, Mgr.	Thos. E. Culp, Mgr.	Liscomb	Thos. E. Culp	G. C.	Test.
663	McBourne	McBourne Creamery	Ind.	Hez. G. Webster, Mgr.	Hez. G. Webster, Mgr.	McBourne .....	.....	.....	.....
664	State Center	State Center Farmers' Cr'y Ass'n	Co-op.	J. W. Carney, Mgr.	J. W. Carney, Mgr.	State Center	Hez. G. Webster	Separator.	Test.
665	St. Anthony	St. Anthony Creamery Co.	Co-op.	J. C. Evans, Sec.	J. C. Evans, Sec.	St. Anthony	N. E. Lorenzen	G. C.	Test.
<i>Miller County.</i>									
666	Mincola	Waterloo Creamery Co. (s)	Stock.	Leroy Corlies, Sec.	Leroy Corlies, Sec.	Council Bluffs .....	.....	Separator.	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of receding milk.
667	Silver City. . .	Waterloo Creamery Co. (s) . . .	Stock.	Leroy Corlies	Council Bluffs.	.....	Separator.	Test.
668	Mincola. . .	Waterloo Creamery Co. (s) . . .	Stock.	Leroy Corlies	Council Bluffs.	.....	Separator.	Test.
669	Glenwood . . .	Farmers Co-op. Creamery. . . .	Co-op.	.....	.....	.....	Separator.	Test.
<i>Mitchell County.</i>								
670	Bailey	Bailey Creamery	Stock.	A. O. Elridge	Elkader	M. G. Bailey	S. & G. C.	Test.
671	Little Cedar . . .	Little Cedar Creamery	Co-op.	C. F. Hookens, Sec. & Mgr. . .	Little Cedar	F. H. Woodem.	G. C.	Test.
672	New Haven . . .	Rock Creek Co-op. Creamery . .	Co-op.	E. N. Nelson, Sec.	Merco Haven	E. V. Cady	G. C.	Test.
673	New Haven . . .	New Haven Creamery Co. . . .	Co-op.	A. J. Carroll, Sec.	New Haven	D. C. Thomas	G. C.	Test.
674	Orchard	Farmers' Co-op. Creamery Co. . .	Co-op.	J. W. Lacy, Mgr.	Orchard	Kaute Hauge	G. C.	Test.
675	Osgae	Osgae Co-op. Creamery	Co-op.	John Forchelt, Sec.	West Mitchell	Georg Helter	G. C.	Test.
676	Riceville	Riceville Co-op. Creamery Co. . .	Co-op.	F. J. Carpenter, Gen. Mgr. . .	Riceville	H. B. Groover	G. C.	Test.
677	Stacyville	Stacyville Creamery	Ind.	James Spensley & Son	Stacyville	G. M. Spensley	Separator.	Test.
678	St. Angus	Farmers' Co-op. Creamery Co. . .	Co-op.	J. M. Tollefson, Sec. & Mgr. .	St. Angus	Eugene Maroness	G. C.	Test.
679	Toeterville	Toeterville Co-op. Creamery Co. .	Co-op.	L. C. Baker, Sec.	Toeterville	S. N. Nelson	Separator.	Test.
680	David	David Co-op. Creamery Co.	Co-op.	Nick. Wayland, Sec.	Meyer	V. Fairbrother	G. C.	Test.
<i>Monroe County</i>								
681	Albia	Albia Creamery	Ind.	S. D. Thompson, Sec.	Albia	S. D. Thompson	Separator.	Test.
<i>Montgomery County</i>								
682	Villisca	Elgin Creamery Co. (s)	Stock.	O. Sands	Chicago, Ill. . . . .	.....	Separator.	Test.
683	Stanton	Elgin Creamery Co. (s)	Stock.	O. Sands	Chicago, Ill. . . . .	.....	Separator.	Test.
684	Elliot	Elgin Creamery Co.	Stock.	O. Sands	Chicago, Ill.	J. H. Baldwin	Separator.	Test.
685	Morton's Mills . .	Elgin Creamery Co. (s)	Stock.	O. Sands	Chicago, Ill. . . . .	.....	Separator.	Test.
<i>Muscatine County</i>								
686	Atalissa	Atalissa Creamery & Produce Co. .	Stock.	Jacob Long, Sec. and Mgr. . .	Atalissa	James T. Starr	G. C.	Test.
687	Moscow	Nickel Plate Creamery (s)	Ind.	Geo. W. Kelly & Son	Wilton	Geo. A. Menglee	S. & G. C.	Test.
688	Wilton	Nickel Plate Creamery	Ind.	Geo. W. Kelly & Son	Wilton Jet. . . . .	.....	S. & G. C.	Test.

CREAMERY LIST—CONTINUED.

Office number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or method of receiving milk.	Method of receiving milk.
725	Mammen	Grant Township Creamery Co.	Co-op.	H. F. Maset, Sec.	Ireton.	John Kennedy.	Separator.	Test.
726	Ellendale.	Ellendale Creamery.	Co-op.	R. M. Crouch, Sec.	Merrill.	Chas. N. Roberts.	Separator.	Test.
727	Merrill	Merrill Creamery Co.	Stock.	J. F. Banks, Mgr.	Millnersville.	James Beck.	Separator.	Test.
728	Millnersville.	Millnersville Creamery Co.	Co-op.	Dan O'Brien, Sec.	Le Mars, Route No. 2.		Separator.	Test.
729	Neptune	Neptune Co-op. Creamery.	Co-op.	Henry Roker.	Rensen.	Elmer Julian.	Separator.	Test.
730	Rensen	Rensen Co-op. Creamery.	Co-op.	G. Lewis, Mgr.	Struble.	Christ Hansen.	Separator.	Test.
731	Struble	Struble Creamery Co.	Co-op.	R. Payne	Kingsley.	Ira Stewart.	S. & G. C.	Test.
732	Kingsley	Payne's Creamery.	Ind.					Test.
	<i>Pocahontas County.</i>							
733	Havelock	Laurens Creamery (s).	Ind.	W. & J. G. Hinn, Props.	Laurens.	F. W. Johnson.	S. & G. C.	Test.
734	Laurens	Laurens Creamery Co.	Ind.	W. & J. G. Hinn, Props.	Laurens.	B. M. Lamb.	S. & G. C.	Test.
735	Lilly	Lilly Creamery Co.	Co-op.	J. E. Lilly, Sec. and Mgr.	Lilly.		Separator.	Test.
736	Palmer	Lizard Creamery.	Stock.	Geo. Siebels, Sec.	R. F. D. Gilmore City.	E. H. Richards.	Separator.	Test.
737	Palmer	Lizard Creamery (s).	Stock.	Geo. Siebels, Sec.	R. F. D. Gilmore City.		Separator.	Test.
738	Palmer	B. Fisher.	Ind.	B. Fisher.	Palmer.	B. Fisher.	Separator.	Test.
739	Pocahontas	Pocahontas Creamery.	Ind.	M. F. Sly, Prop.	Pocahontas.	J. P. Cummings.	Separator.	Test.
740	Pomeroy	Bretholz Creamery.	Ind.	Wm. Bretholz.	Pomeroy.	Wm. Bretholz.	Separator.	Test.
741	Rolfe	Gilt-Edge Creamery.	Ind.	W. R. Rogers, Prop.	Rolfe.	W. R. Rogers.	Separator.	Test.
742	Rusk	Rusk Co-op. Creamery Co.	Co-op.	R. O. Christenson.	Rusk.	Oscar Peterson.	Separator.	Test.
743	Plover	Plover Creamery.	Ind.	F. J. Bradsley, Prop.	Plover.	F. J. Bradsley.	G. C.	Test.
744	Ware	J. L. Blunt & Co. Hand Separator	Ind.	C. A. Vittum, Sec.	Ware.	C. A. Vittum.	G. C.	Test.
	<i>Polk County.</i>							
745	Campbell	Grimes Butter & Cheese Co. (s).	Stock.	W. J. Stewart, Sec.	Grimes.	C. E. Gustin.	Separator.	Test.
746	Des Moines	Waterloo Creamery.	Stock.	Burt B. Corlies.	Des Moines.	G. A. Stewart.	Separator.	Test.
747	Grimes	Grimes Butter & Cheese Co.	Stock.	W. J. Stewart, Sec.	Grimes.	C. H. Phillips.	Separator.	Test.
748	Mitchellville	Mitchellville Creamery Co.	Co-op.	B. J. Lee, Sec.	Mitchellville.		Separator.	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or method of creaming.	Method of testing milk.
782	Harlan	Center Creamery	Co-op.	J. M. Garst	Harlan, R. R. No. 2	E. H. Hoover	Separator.	Test.
783	Irwin	Manning Creamery (s)	Co-op.	J. H. Runkton	Farmington, Neb.	Peter Peterson	G. C.	Test.
784	Marne	Clay Twp. Separator Creamery	Co-op.	E. D. Corey, Sec.	Marne	Separator.	Separator.	Test.
785	Jackmanville	Rock Valley Creamery Co.	Co-op.	R. Rasmussen, Sec.	Marne, R.F.D. 2	Separator.	Separator.	Test.
786	Jackmanville	Butter Valley Creamery Co.	Co-op.	W. R. Adams, Sec.	Kirkman	Separator.	Separator.	Test.
787	Portsmouth	Butter Valley Creamery Co.	Ind.	M. A. Sorenson	Portsmouth	Hd. S.	Hd. S.	Test.
788	Shelby	Waterbury Creamery Co. (s)	Stock.	Leroy Corlies	Connell Bluffs	Separator.	Separator.	Test.
789	Westphalia	The Harding Creamery (s)	Co-op.	Frank Chelle, Sec. & Mgr.	Sealing	Separator.	Separator.	Test.
790	Prairie Rose	Prairie Rose Creamery	Co-op.	J. D. Lorentzen	Prairie Rose	Separator.	Separator.	Test.
791	Harlan	Harlan Creamery Co.	Co-op.	Harlan Creamery Co.	Harlan	Separator.	Separator.	Test.
<i>Stout County.</i>								
792	Alton	Alton Creamery	Ind.	Geo. R. Mueller, Prop.	Alton	Geo. R. Mueller	Separator.	Test.
793	Chadsworth	Farmers' Co-op. Creamery Co.	Co-op.	Jas. Carpenter, Sec.	Chadsworth	Ben. Karloff	Separator.	Test.
794	Granville	Granville Creamery	Ind.	Ben. Karloff	Granville	S. & G. C.	Separator.	Test.
795	Hawarden	Hawarden Creamery Ass'n.	Co-op.	J. M. L.	Hawarden	S. & G. C.	Separator.	Test.
796	Hesper	Hesper Creamery	Ind.	Stoner & Boteman	Hesper	S. & G. C.	Separator.	Test.
797	Hull	Hesper Creamery	Ind.	Ed. Stensvad, Mgr.	Hull	S. & G. C.	Separator.	Test.
798	Rock Valley	Rock Valley Creamery	Ind.	C. H. Day	Rock Valley	C. H. Day	Separator.	Test.
<i>Story County.</i>								
799	Ames	Iowa State College Creamery	State.	Prof. G. L. McKay, Mgr.	Ames	J. F. Burretta	Separator.	Test.
800	Cambridge	Farmers' Co-op. Creamery Co.	Co-op.	M. F. King, Sec.	Cambridge	J. F. Burretta	Separator.	Test.
801	Collins	Farmers' Co-op. Creamery Co.	Co-op.	A. G. Armstrong	Collins	J. F. Burretta	Separator.	Test.
802	Collins	Farmers' Co-op. Creamery Co.	Co-op.	E. J. Carver, Sec.	Collins	J. F. Burretta	Separator.	Test.
803	Gilbert Station	Farmers' Co-op. Creamery Ass'n.	Co-op.	C. F. Ruth	Gilbert Station	J. F. Burretta	Separator.	Test.
804	Huxley	Huxley Farmers' Co-op. Creamery	Co-op.	A. H. Sheldahl, Sec.	Huxley	J. F. Burretta	Separator.	Test.
805	Kelley	Kelley Farmers' Co-op. Creamery	Co-op.	Jno. F. Gerbracht, Sec.	Kelley	J. F. Burretta	Separator.	Test.
806	Kelley	The Farmers' Co-op. Creamery Co.	Co-op.	J. I. Flemming	Kelley	J. F. Burretta	Separator.	Test.
807	McCallsburg	McCallsburg Creamery	Ind.	W. O. Bates	McCallsburg	J. F. Burretta	Separator.	Test.
808	Nevada	Nevada Creamery	Ind.	Boardman Bros.	Nevada	J. F. Burretta	Separator.	Test.
809	Roland	Roland Farmers' Creamery Co.	Co-op.	H. C. Duer, Sec.	Roland	J. F. Burretta	Separator.	Test.
810	Flater	Flater Farmers' Creamery Co.	Co-op.	Ole Langland, Sec.	Flater	J. F. Burretta	Separator.	Test.

811	Story City	Story City Farmers' Coop. Cr'y.	Co-op	Alex. Henderson, Sec.	Story City	Geo. Nick	Separator.	Test.
812	Zearing	Zearing Creamery Co.	Co-op	C. A. Burkhardt, Sec.	Zearing	J. J. Ross	Separator.	Test.
<i>Tama County</i>								
813	Berlin	Berlin Creamery	Ind	Schleber & Merrick	Reinbeck	C. L. Schleber	Separator.	Test.
814	Chelsea	Springbrook	Ind	John Newman Co	Reinbeck	J. C. Bucher	Separator.	Test.
815	Clutier	Schleber & Merrick (s)	Ind	Schleber & Merrick	Reinbeck		Separator.	Test.
816	Crystal	Dinsdale Creamery (s)	Ind	Schleber & Merrick	Reinbeck	T. W. Merrick	Separator.	Test.
817	Dinsdale	Dinsdale Creamery	Ind	Schleber & Merrick	Reinbeck	J. W. Burdett	Separator.	Test.
818	Dysart	Schleber & Merrick	Ind	Schleber & Merrick	Reinbeck	Chas. Kucera	Separator.	Test.
819	Eberon	Springbrook Creamery	Ind	John Newman Co	Reinbeck	Burton Owens	Separator.	Test.
820	Gladbrook	Gladbrook Creamery	Ind	P. McNelly, Prop	Reinbeck		Separator.	Test.
821	Tama	Tama Co-op. Creamery Co.	Co-op	L. I. Carson	Tama		Separator.	Test.
<i>Taylor County</i>								
822	Clearfield	Clearfield Creamery Co.	Stock	Joe Doubt, Sec	Clearfield	G. W. McNair	Separator.	Test.
823	Bedford	Bedford Creamery	Ind	W. A. Gethman, Mgr	Bedford		G. C.	Test.
824	Guss	Cold Spring Creamery	Ind	H. E. Mease	Guss	C. J. Ellis	Separator.	Test.
825	Lenox	Elgin Creamery Co	Stock	O. Sands	Chicago, Ill		Separator.	Test.
<i>Union County</i>								
826	Argos	Elgin Creamery Co	Ind	O. Sands	Chicago, Ill	Geo. Beckman	Separator.	Test.
827	Greton	Elgin Creamery Co	Ind	O. Sands	Chicago, Ill	A. W. McCall	Separator.	Test.
828	Greenwell	Elgin Creamery Co (s)	Ind	O. Sands	Chicago, Ill		Separator.	Test.
829	Afton	Elgin Creamery Co	Ind	O. Sands	Chicago, Ill	G. W. Kelley	Separator.	Test.
830	Kent	Prescott B. & C. A. W'n (s)	Co-op	Frank Brandt, Sec	Prescott		Separator.	Test.
831	Dodge Twp.	Elgin Creamery (s)	Ind	O. Sands	Chicago		Separator.	Test.
832	Lorimer No. 4	Talmage Creamery (s)	Ind	W. F. Craig, Foreman	Talmage		Separator.	Test.
833	Lincoln Twp.	Elgin Creamery (s)	Ind	O. Sands	Chicago		Separator.	Test.
834	Talmage No. 1	Talmage Creamery Co	Stock	W. F. Craig, Mgr	Talmage	Chas. Mosteller	Separator.	Test.
835	Talmage No. 2	Talmage Creamery Co (s)	Stock	W. F. Craig, Mgr	Talmage		Separator.	Test.
836	Talmage No. 3	Talmage Creamery Co (s)	Stock	W. F. Craig, Mgr	Talmage		Separator.	Test.
837	Talmage No. 8	Talmage Creamery Co (s)	Stock	W. F. Craig, Mgr	Talmage		Separator.	Test.
838	Pleasant Twp.	Elgin Creamery Co (s)	Ind	O. Sands	Chicago		Separator.	Test.
839	Thayer	Elgin Creamery Co (s)	Ind	O. Sands	Chicago		Separator.	Test.
<i>Van Buren</i>								
840	Milton	Milton Creamery	Ind	V. F. Cooley	Milton	Richard Quirk	G. C.	Test.
841	Cantril	Milton Creamery (s)	Ind	V. F. Cooley	Milton		G. C.	Test.
842	Bonaparte	Bonaparte Creamery (s)	Stock	Kirk Meek	Bonaparte	A. J. Miller	G. C.	Test.
843	Cantril	Bonaparte Creamery (s)	Stock	Kirk Meek	Bonaparte		G. C.	Test.
844	Leando ?	Leando Creamery	Ind				Separator.	Test.
<i>Washteno County</i>								
845	Blakesburg	Blakesburg Creamery	Ind	Foland Bros.	Blakesburg	Foland Bros	Separator.	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of testing milk.
Warren County								
846	Carlisle	Farmers' Co-op. Creamery Co.	Co-op.	C. Beachamp.	Carlisle	H. Owens	Separator.	Test.
847	Indianola	Warren County Creamery	Ind.	E. Haldeman	Indianola	E. Culbertson	Separator.	Test.
848	Indianola	Warren County Creamery (s)	Ind.	E. Haldeman	Indianola .....	.....	Separator.	Test.
849	Prole	Waterloo Creamery (s)	Stock	B. E. Corlies	Des Moines .....	.....	Separator.	Test.
860	St. Marys	Warren County Creamery Co. (s)	Ind.	E. Haldeman	Indianola .....	.....	Separator.	Test.
Washington County								
851	Kalona	Kalona Creamery	Ind.	W. G. Brooke, Mgr	Kalona	L. W. Brooke	G. C.	Test.
852	Noble	Oak Ridge Creamery	Ind.	J. A. Eicher, Mgr	Noble	Jno. Widner	Separator.	Test.
853	Riverside	Riverside Creamery	Ind.	Geo. Nicola, Mgr	Riverside	Geo. Nicola	G. C.	Test.
854	Washington	Washington Creamery	Ind.	T. L. Emery & Sons	Washington	John McLaue	Separator.	Test.
855	Wellman	Wellman Creamery	Ind.	P. J. Gregg	Wellman .....	.....	Separator.	Test.
Wayne County								
857	Gambria	Old Colony Creamery (s)	Ind.	T. G. Hyde, Mgr	Huneston .....	.....	Separator.	Test.
858	Corydon	Old Colony Creamery (s)	Ind.	T. G. Hyde, Mgr	Huneston .....	.....	Separator.	Test.
859	Huneston	Old Colony Creamery	Ind.	T. G. Hyde, Mgr	Huneston	L. D. Winland	Separator.	Test.
860	Lainsburg	Old Colony Creamery (s)	Ind.	T. G. Hyde, Mgr	Huneston .....	.....	Separator.	Test.
Webster County								
861	Badger	Badger Creamery	Ind.	Roger Smith	Humboldt	C. F. Wendt	Separator.	Test.
862	Barium	Barium Creamery	Ind.	G. E. Moon & Co	Manson	E. D. Rogers	Separator.	Test.
863	Clare	Clare Creamery	Ind.	J. A. Blakeman, Prop.	Clare	J. A. Blakeman	Separator.	Test.
864	Duncombe	Duncombe Creamery	Ind.	R. Smith	Duncombe	C. E. McBride	Separator.	Test.
865	Gowrie	Gowrie Creamery	Ind.	R. E. Gould, Prop. ....	.....	.....	G. C.	Test.
866	Fort Dodge	Oakdale Creamery	Ind.	Z. W. Thomas, Prop.	Fort Dodge	G. C. Benson	S. & G. C.	Test.
867	Industry	Oakdale Creamery (s)	Ind.	Z. W. Thomas, Prop.	Fort Dodge .....	.....	S. & G. C.	Test.
Winnebago County								
868	Buffalo Center	Farmers' Co-op. Creamery Co.	Co-op.	Geo. J. Anderson, Sec	Buffalo Center	A. Woolery	S. & G. C.	Test.

860	Dahl's Church..	Lake Mills Creamery Co. (s).....	Co-op.	J. A. Howie	Lake Mills..	Lewis Richards	Separator.	Test.
861	Forest City ..	Forest City Co-op. Creamery.....	Co-op.	P. N. Anderson, Sec	Forest City ..	A. M. Hanson	Separator.	Test.
862	Lake Mills ..	Lake Mills Creamery Co.....	Co-op.	J. A. Howie, Pres. & Mgr.	Lake Mills ..		Separator.	Test.
863	Forest City ..	Forest City Co-op. Creamery (s).....	Co-op.	P. N. Anderson, Sec.	Forest City ..		Separator.	Test.
864	Leland ..	Forest City Co-op. Creamery (s).....	Co-op.	P. N. Anderson, Sec.	Fertile ..		Separator.	Test.
865	Mount Valley ..	Fertile Co-op. Creamery (s).....	Co-op.	J. F. Tallackson, Sec.	Fertile ..		Separator.	Test.
866	Newman ..	Lake Mills Co-op. Creamery (s).....	Co-op.	J. A. Howie	Lake Mills ..		Separator.	Test.
867	Norman ..	Norman Creamery Ass'n.....	Co-op.	Axel Arneson	Norman ..	A. O. Dahlien	Separator.	Test.
868	Seaville ..	Seaville Creamery Ass'n.....	Co-op.	Isaac Larson, Pres. & Mgr.	Seaville ..	W. J. Nagel	Separator.	Test.
869	Eden Co-op. Creamery Ass'n.....	Eden Co-op. Creamery Ass'n.....	Co-op.	David Skutle, Sec.	Amund ..	Morris J. Eidal	Separator.	Test.
870	Thompson ..	Thompson Co-op. Creamery Co.....	Co-op.	Jas. Erickson, Mgr.	Thompson ..	F. W. Borne	Separator.	Test.
871	Thompson ..	Thompson Co-op. Cr'y Co (s).....	Co-op.	Jas. Erickson, Mgr.	Thompson ..		Separator.	Test.
872	Rake ..	Lincoln Co-op. Creamery.....	Co-op.	B. Quanne	Rake ..	P. N. Peterson	Separator.	Test.
873	Hollandale ..	Lincoln Co-op. Creamery (s).....	Ind.	L. C. Petersen	Woden ..		Separator.	Test.
<i>Winnebago County.</i>								
883	Calmar ..	Calmar Creamery.....	Ind.	A. E. Roe & N. H. Nelson.	Calmar ..	A. Fluegel	G. C	Test.
884	Burr Oak ..	Silver Creek Creamery Co.....	Co-op.	F. W. Heasel, Sec.	Burr Oak ..	F. W. Heasel	G. C	Test.
885	Fertina ..	Fertina Creamery Co.....	Co-op.	W. A. Schrandt, Sec.	Calmar Rural			
886	Fort Atkinson ..	Fort Atkinson Creamery.....	Stock.	A. O. Elvidge Pres.	F. D. No. 1.	Henry Hess	G. C	Test.
887	Hesper ..	Hesper Creamery.....	Ind.	T. G. Mender Prop.	Elkader ..	H. B. Fortney	G. C	Test.
888	Highlandville ..	Highlandville Creamery.....	Ind.	Bidne, Akre & Bjorgo, Props	Heeper ..	J. H. Hiatt	G. C	Test.
889	Hesper ..	Rock Springs Creamery.....	Stock.	H. O. Larson, Sec.	Highlandville ..	P. J. Bidne	G. C	Test.
890	Jackson Jet ..	Jackson Junction Creamery.....	Stock.	A. Webster	Hesper ..	V. V. Johnson	G. C	Test.
891	Kendallville ..	Kendallville Creamery.....	Ind.	Boc Nelson, & Co.	Waucoma ..	R. M. Barlow	Separator.	Test.
892	Nordness ..	Nordness Creamery.....	Stock.	J. N. Bragstad, Sec. & Mgr.	Kendallville ..	Ed. Haines	G. C	Test.
893	Nordness ..	East Oak Creamery.....	Co-op.	Erk E. Clement, Mgr	Nordness ..	Nels Olsen	G. C	Test.
894	Osdan ..	Silver Spring Creamery.....	Stock.	M. J. Nicholson, Sec.	Decorah Rural	Erk E. Clement	G. C	Test.
895	Ridgeway ..	Lincoln Farmers' Co-op. Cr'y ..	Co-op.	A. W. Praun, Sec.	F. D. No. 1.	Geo. H. Thume	G. C	Test.
896	Ridgeway ..	L. T. Fosse & Son.....	Ind.	L. T. Fosse & Son.....	F. D. No. 2.	Ole Slobakken	G. C	Test.
897	Spillville ..	Spillville Creamery Ass'n.....	Ind.	M. J. Nicholson & Co.	Ridgeway ..		G. C	Test.
<i>Woodbury County</i>								
898	Correctionville ..	Correctionville Creamery.....	Ind.	Hopkins & Hubbard	Decorah Rural	Wm. Spidher	G. C	Test.
899	Danbury ..	Danbury Creamery.....	Ind.	W. C. Hayden	F. D. No. 2.			
900	Sioux City ..	Hanford Hazalwood Cream Co....	Stock.	David Brown, Pres	Decorah Rural			
<i>Worth County</i>								
901	Bolan ..	Bolan Creamery.....	Ind.	Henry White	Grafton ..	Henry White	Separator.	Test.
902	Bristol ..	Lake Mills Creamery Co. (s).....	Co-op.	J. A. Howie	Lake Mills ..		Separator.	Test.
903	Fertile ..	Fertile Co-op. Dairy Co.....	Co-op.	J. F. Tallackson, Sec.	Fertile ..	J. A. Johnson	Separator.	Test.
904	Grafton ..	Bolan Creamery (s).....	Ind.	Henry White	Grafton ..		Separator.	Test.
905	Joice ..	Nordland Creamery.....	Co-op.	T. L. Lee, Mgr.	Joice ..	A. H. Nielson	Separator.	Test.
906	Kensett ..	Danville Co-op. Creamery Ass'n.....	Co-op.	H. K. Myke, Sec. and Mgr.	Kensett ..	Herman Stendel	Separator.	Test.

(CREAMERY LIST—CONTINUED.)

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of testing milk.
907	Manly.....	Farmers Co-op. Ass'n	Co-op.	E. R. Stock, Sec. and Mgr.	Manly.....	J. F. Cochoeur	Separator.	Test.
908	Northwood.....	Brookfield Creamery Ass'n	Co-op.	E. A. Tenold, Sec. and Mgr.	Northwood.....	R. S. Bergsaber	S. & G. C.	Test.
909	Northwood.....	Farmers' Butter and Cheese Ass'n	Co-op.	M. D. Johnson, Sec.	Northwood.....	J. H. Jones	S. & G. C.	Test.
910	Northwood.....	Farmers' Co-op. Creamery Ass'n	Co-op.	O. G. Anderson, Sec.	Tenold.....	N. O. Dahlen	Separator.	Test.
911	Northwood.....	Hartland Dairy Ass'n	Co-op.	E. T. Hanson, Sec. and Mgr.	Silver Lake.....	T. A. Storvick	Separator.	Test.
912	Meltonville.....	Meltonville Dairy Ass'n.	Stock.	A. S. Larson, Sec.	Meltonville.....	S. Klemesrud	G. C.	Test.
<i>Wright County.</i>								
913	Belmond.....	Greenfield & Frohling.....	Ind.	Greenfield & Frohling.....	Belmond.....	Greenfield & Frohling	S. & G. C.	Test.
914	Belmond.....	Norway Co-op. Creamery Co.	Co-op.	C. J. Baxter, Sec.	Belmond, Route No. 2.....	H. E. Gates	G. C.	Ind.
915	Clarion.....	Clarion Creamery.....	Co-op.	O. P. Morton, Sec.	Clarion.....	A. H. Adams	G. C.	Test.
916	Eagle Grove.....	Eagle Grove Co-op. Creamery Co.	Co-op.	Geo. L. Webster, Sec.	Eagle Grove.....	A. J. Ford	S. & G. C.	Test.
917	Goldfield.....	Goldfield Creamery Co.	Ind.	Guy Thomas	Goldfield.....	Guy Thomas	S. & G. C.	Test.
918	Galt.....	Galt Creamery Co.	Co-op.	A. J. Ketchum	Galt.....	G. W. Umbreit	S. & G. C.	Test.
919	Palaville.....	Palaville Co-op. Creamery Co.	Co-op.	A. Melnderr, Sec.	Palaville.....	C. O. May	Separator.	Test.
920	Rowan.....	Rowan Creamery Co-op. Co.	Co-op.	F. B. Sheldon, Sec.	Rowan.....	Ben Fauselon	Separator.	Test.

IOWA CHEESE FACTORY LIST.

Arranged alphabetically according to counties and towns near which factory is located, together with information pertaining to each.

Office record number.	LOCATED AT OR NEAR.	NAME OF CHEESE FACTORY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF CHEESE MAKER.	Method of testing milk.
	<i>Adams County.</i>						
1	Cumberland	Lincoln Center Factory	Individual.	Henry Fleharty.	Hays.	H. Fleharty	Hundred.
	<i>Appanoose County.</i>						
2	Moulton	Moulton Cheese Factory	Individual.	A. C. Dickson.	Moulton	A. Dickson.	Hundred.
3	Ray	Ray Cheese Factory	Stock	L. C. Main, Sec.	Ray	John F. Hiatt.	Hundred.
4	Hiattville	Hiatt Factory	Individual.	W. D. Hiatt, Prop.	Centerville, I. P. A.	W. O. Hiatt.	Hundred.
	<i>Benton County.</i>						
5	Atkins	Ideal Factory	Individual.	A. C. Stewart, Prop.	Atkins	J. W. Stewart.	Hundred.
6	Menhall	Red Arrow Cheese Factory	Individual.	C. B. Chenoweth, Mgr.	Newhall. ....	.....	Hundred.
	<i>Black Hawk County.</i>						
7	Waterloo.	Waterloo Cheese Factory	Stock	Geo. V. Fowler, Mgr.	Waterloo.	F. E. Wightman.	Test.
8	Waterloo.	North Star	Stock	Geo. V. Fowler, Mgr.	Waterloo.	Chas. Wood.	Test.
	<i>Bremer County.</i>						
9	Janessville	Janessville	Stock	Geo. V. Fowler, Mgr.	Waterloo.	John McMurray.	Test.
	<i>Carroll County.</i>						
10	Carrollton.	Carrollton	Individual.	F. E. Heesler.	Carrollton.	F. E. Heesler.	Hundred.

IOWA CHEESE FACTORY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CHEESE FACTORY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF CHEESE MAKER.	Method of testing milk.
	<i>Cerro Gordo County.</i>						
11	Burchinal	Burchinal Cheese Factory	Individual.	T. R. Coates, Sec.	Burchinal	B. G. Schafer	Hundred.
12	Mason City	Lincoln Dairy Co.	Co-op	John W. Smith, Sec.	Mason City	J. C. Schafer	Test.
	<i>Crawford County.</i>						
13	Astor	Astor Cheese Factory	Co-op	Ed. Theobald, Sec.	Astor	Wm. Gerber	Hundred.
	<i>Clark County.</i>						
14	Weldon	Weldon Cheese Factory	Individual.	L. M. Parr	Weldon	L. M. Parr	Hundred.
	<i>Decatur County.</i>						
15	Bracewell	Snow's Cheese Factory	Individual.	A. A. Snow	Bracewell .....	.....	Hundred.
	<i>Floyd County.</i>						
16	Charles City	Elm Spring Cheese Factory	Individual.	H. D. White	C. B. Higgins .....	.....	Test.
	<i>Greene County.</i>						
17	Dana	Dana Mutual Co-op. Cr'y Co.	Co-op	W. J. Elling	Dana	W. J. Elling	Test.
	<i>Guthrie County.</i>						
18	Jamaica	Jamaica Cheese Factory	Individual.	A. H. Chadsey	Jamaica .....	.....	Hundred.
	<i>Hardin County.</i>						
19	Iowa Falls	Ellis Cheese Factory	Stock	W. J. Clark, Mgr	Iowa Falls	E. Clark	Hundred.
	<i>Howard County.</i>						
20	Cresco	Cresco Cheese Factory	Individual.	Wm. Kellow, Jr.	Cresco	W. N. Lathrop	Hundred.

21	Cresco	Clover Leaf Cheese Factory	Individual.	J. J. House	Cresco	J. J. House	Hundred.
	<i>Humboldt County.</i>						
22	Renwick	Sunny Grove Cheese Factory	Stock ..	Conrad Elmer	Renwick	Fred Gugger	Hundred.
	<i>Jefferson County.</i>						
23	Pleasant Plain	Pleasant Plain Cheese Ass'n	Co-op.	E. N. Crumley, Sec.	Pleasant Plain	W. J. Alter	Test.
24	Vero	Vero Cheese Association	Co-op.	James Jones, Sec.	Vero	F. S. Rynor	Test.
25	Woolson	Woolson Cheese Company	Stock	Sanford Bray	Woolson	Austin Laseen	Test.
	<i>Johnson County</i>						
26	Iowa City	Sharon Cheese Factory	Co-op.	Jas. T. Jones, Sec.	Iowa City	Robert Gongo	Hundred.
	<i>Kosciusko County.</i>						
27	Talleyrand	Talleyrand Cheese Factory	Stock	L. M. Tucker, Sec.	Talleyrand	C. Tucker	Test.
	<i>Kosciusko County</i>						
28	LaVerne	Pioneer Cheese Factory	Stock	S. B. Hefby, Sec.	Renwick .....	.....	Test.
	<i>Monroe County.</i>						
29	Albia	Bone Cheese Factory	Individual.	S. G. Bone	Albia	Merle Bone	Hundred.
30	Albia	Hinton Cheese Factory	Individual.	Sam Hinton	Albia	Gall Hinton	Hundred.
31	Albia	Hollingshead	Individual.	J. C. Hollingshead	Albia	J. C. Hollingshead	Hundred.
	<i>Marshall County.</i>						
32	Liscomb	Liscomb Cheese Factory	Stock	Thos. E. Culp, Mgr.	Liscomb	J. D. Mills	Test.
	<i>Muscatine County.</i>						
33	Wilcox Junction	Muscatine French Cheese Co.	Co-op	Fritz Kolb	Wilcox Junction.	Bruno Schultz	Hundred.
	<i>Page County.</i>						
34	College Springs	College Springs Cheese Factory	Individual.	J. H. Loughlin	College Springs	J. H. Loughlin	Hundred.
	<i>Poweshiek County.</i>						
35	Grinnell	Bartell Cheese Factory	Individual.	J. E. Bartell	Grinnell	J. E. Bartell	Test.
36	Jacobs	Jacobs Factory	Individual.	A. C. Payne	Jacobs	Geo. Manor	Test.
	<i>Ringold County.</i>						
37	Benton	Benton Cheese Factory	Individual.	.....	.....	.....	Hundred.

IOWA CHEESE FACTORY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CHEESE FACTORY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF CHEESE MAKER.	Method of testing milk.
	<i>Scott County.</i>						
38	Princeton . . .	Wapsie Cheese Factory	Individual.	L. W. Pope & Son	Princeton.		
	<i>Story County</i>						
39	Iowa Center . . .	Iowa Center Cheese Factory	Individual.	J. Q. Moore, Prop.	Iowa Center	W. H. Moore.	Test.
40	Ames	I. A. C. Cheese Factory	State	G. L. McKay, Mgr	Ames . . . . .	.....	Test.
	<i>Tama County</i>						
41	Dysart	Gold Dust Factory	Individual.	R. E. Fairbanks	Dysart . . . . .	.....	Hundred.
	<i>Taylor County</i>						
42	Sharpsburg . . .	Sharpsburg Cheese Factory	Individual.	G. S. Eastlack, Mgr.	Sharpsburg	G. S. Eastlack	Hundred.
43	Gravely	Gravely Cheese Factory	Individual.	Neal Johnson, Prop.	Gravely	Neal Johnson	Hundred.
44	Guss	Maple Grove Cheese Factory	Individual.	E. G. Schoonover	Guss . . . . .	.....	Hundred.
45	Blockton	Blockton Cheese Factory	Individual.	Waldrip & Bonafield	Blockton	Waldrip & Bonafield	Hundred.
	<i>Warren County</i>						
46	Milo	Belmont Cheese Factory	Individual.	Jno. Keller	Milo . . . . .	.....	Hundred.
	<i>Washington County</i>						
47	Clay	Clay Cheese Factory	Stock	O. Mescham, Sec.	Richland R. F. D. No. 2	O. W. Hake	Test.
48	West Chester . .	Leet Cheese Factory	Individual.	W. E. Leet, Prop.	West Chester	W. E. Leet	Hundred.
	<i>Wayne County</i>						
49	Promises City . .	Promises City Cheese Factory	Co-op	C. A. Sagar	Seymour	Geo. Hanna	Hundred.
50	Sewall	Sewall Cheese Mfg Co.	Individual.	J. N. Farnsworth	Sewall	A. Kent	Hundred.
51	Linoville	Linoville Cheese Factory	Individual.	Matthew DeHann	Linoville	Matthew DeHann	Hundred.
52	Seymour	Seymour Cheese Co.	Stock	R. A. Weagley, Sec.	Seymour	R. E. Spencer	Hundred.

DISTRICT ASSOCIATIONS.

One of the most valuable efforts made during the last season to promote interest in buttermaking has been the organization of several local dairy associations. A list of these associations and their officers appears below. The territory of each of these associations is not limited to any number of counties and buttermakers from any creamery conveniently situated to the places of meeting are at liberty to send butter to these meetings and to have it scored.

Eastern Iowa Buttermakers and Dairymens Association.

President, C. D. Elder, Manchester.
Vice-President, A. A. Palmer, Manchester.
Secretary, P. H. Kieffer, Strawberry Point.
Treasurer, A. L. Landis, Colesburg.

North Central Iowa Buttermakers and Dairymens Association.

President, Fred Schreiber, North Washington.
Vice-President, J. J. Brunner, Nilesville.
Secretary, E. Pufahl, Nora Springs.
Treasurer, W. W. Day, Charles City.

Wapsie and Cedar Valley Buttermakers Association.

President, F. C. Oltrogge, Tripoli.
Secretary, C. E. Carr, Fredrika.
Treasurer, H. C. Ladage, Tripoli.

Northwestern Iowa Buttermakers Association.

President, N. H. Knudson, Emmetsburg.
Vice-President, J. Fennell, Mallard.
Secretary, W. L. Kepler, Spencer.
Treasurer, D. L. Driver, Burt.

Central Iowa Buttermakers Association.

President, P. Jensen, Eldora.
Vice-President, N. H. Trimble, Iowa Falls.
Secretary-Treasurer, H. K. Gronbeck, Jewell.

The Botna Valley Creamery Association.

President, J. C. Hardman, Brayton.
Vice-President, M. P. Hoegh, Brayton.
Secretary-Treasurer, J. P. Nielsen, Brayton.

The State Dairy Association, meets at Cedar Rapids, Feb. 3-5, 1903.

President, S. B. Shilling, Mason City.
Vice-President, H. R. Carpenter, Elkader.
Secretary, J. C. Daly, Charles City.
Treasurer, M. W. Ashby, Hazleton.

RAILWAY BUTTER SHIPMENTS.

The following tables of butter shipments represent the shipments of butter from Iowa points to points outside the state for the year ending September 30, 1902. Attention is called to the fact that the creamery butter statistics printed before in this report are for the year ending May 1, 1902, and hence the tables following are the latest as well as the most accurate of any published herewith. No figures show the exact facts in regard to the state's dairy business except the statistics of shipments of dairy products out of the state.

The greatest amount of butter ever shipped out of Iowa in one year was 83,620,081 pounds in the year ending September 30, 1897, and the average price for that year was 18.85 cents, the lowest price that butter has ever reached. The butter that year must have brought to the state \$15,000,000 besides paying the freight. This year the butter shipped from the state aggregates 72,714,584 pounds and the price has been 24.16 cents a pound and the value to the state must be in excess of the amount received when the maximum amount of butter was produced.

From a study of the following tables it will be seen that really only a few of the counties of the state are making any extraordinary quantities of butter, and that the chance for dairy development is still very great.

The decrease in butter shipments is much less than was anticipated, and will be surprising to many who had looked for a revolutionary statement in these figures. The following statistics are direct from the freight agents of the various railroads, who very courteously furnish this department with these statistics each year. They are accurate as well as comprehensive, and are greatly appreciated both by the commissioner and by those who are interested in this report. A small amount of business of Iowa creameries is secured from the state of South Dakota as some of their creameries are shipping cream to Sioux City. Also small amounts of packing stock are shipped in from Nebraska and elsewhere, made into renovated butter and shipped out of the state. These items swell the butter shipments of the state. While this amount of butter, whatever it is, has

not been produced in the state, it should not be forgotten that a good deal of cream along the northern and eastern border of the state is shipped to Minneapolis and to eastern points, and it is believed that these shipments nearly or quite equalize the shipments of cream and packing stock into the state which are afterwards included in the butter shipments as shown in the following table. So that for all practical purposes the tables following are reasonably accurate.

BUTTER SHIPMENTS.

COUNTY.	NUMBER OF CREAMERIES FOR 1901 AND 1902.		GROSS POUNDS OF BUTTER SHIPPED OUT OF THE STATE FOR THE YEARS ENDING SEPTEMBER 30, 1901, AND 1902, SHOWING INCREASE AND DECREASE BY COUNTIES.			
	1901.	1902.	1901.	1902.	Increase.	Decrease.
The State.....			99,123,697	96,564,981	7,800,466	9,869,182
Adair.....	15	18	875,916	848,409	.....	29,507
Adams.....	7	6	559,180	444,431	.....	114,669
Allamakee.....	8	7	1,332,513	1,304,318	.....	27,696
Appanoose.....	..	..	12,685	70,737	58,102	.....
Audubon.....	12	11	1,314,022	1,080,121	.....	223,901
Benton.....	17	18	1,010,623	600,097	.....	410,526
Black Hawk.....	21	20	2,153,417	1,847,781	.....	308,636
Boone.....	8	7	127,843	108,517	.....	24,326
Bremer.....	22	22	3,512,239	2,878,128	.....	634,161
Buchanan.....	20	18	8,883,855	3,191,442	2,567	.....
Buena Vista.....	12	10	1,530,408	1,026,794	.....	509,609
Butler.....	22	21	2,734,889	2,318,258	.....	416,081
Calhoun.....	10	10	1,735,258	1,417,867	.....	317,391
Carroll.....	12	12	840,622	1,198,172	352,550	.....
Cass.....	9	10	452,539	370,228	.....	82,361
Cedar.....	9	9	851,945	443,197	92,252	.....
Cerro Gordo.....	7	6	979,308	788,304	.....	191,102
Cherokee.....	7	7	272,286	124,246	.....	148,040
Chickasaw.....	19	17	2,801,605	2,715,724	.....	85,881
Clarke.....	5	4	109,950	17,000	.....	92,950
Clay.....	11	18	893,539	665,572	.....	197,967
Clayton.....	19	20	2,257,940	2,990,396	722,446	.....
Clinton.....	15	17	1,247,339	1,180,200	.....	67,139
Crawford.....	5	5	822,091	1,079,005	256,914	.....
Dallas.....	10	10	764,781	877,279	112,498	.....
Davis.....	2	5	50,207	133,615	83,408	.....
Decatur.....	3	4	52,164	22,757	.....	29,407
Delaware.....	28	25	2,662,036	2,472,243	10,207	.....
Des Moines.....	..	..	325,602	295,926	.....	29,676
Dickinson.....	5	5	606,536	641,530	85,054	.....
Dubuque.....	22	30	2,238,028	2,322,444	84,416	.....
Emmet.....	11	11	800,540	773,618	.....	26,922
Fayette.....	20	20	2,441,381	2,448,798	7,412	.....
Floyd.....	7	7	703,575	959,608	256,033	.....
Franklin.....	12	12	268,535	534,164	.....	264,421
Fremont.....	..	1	5,112	3,432	.....	1,680
Greene.....	11	6	429,436	284,813	.....	144,623
Grundy.....	15	14	890,050	675,555	.....	204,495
Guthrie.....	16	17	1,804,308	1,218,177	.....	586,131
Hamilton.....	12	11	965,326	1,170,630	205,304	.....
Hancock.....	12	12	531,237	543,176	.....	13,061
Hardin.....	15	17	2,475,465	1,835,521	.....	634,944
Harrison.....	5	5	176,463	411,383	234,517	.....
Henry.....	4	3	76,251	71,538	.....	4,688
Howard.....	11	10	1,550,764	1,433,452	.....	117,312

* Errors in statements of butter shipments from Dubuque and Franklin counties for 1901 reduce the figures from these counties and from the State by 682,967 pounds. The figures here given are correct.

BUTTER SHIPMENTS—CONTINUED.

COUNTIES.	NUMBER OF CREAM- ERIES FOR 1901 AND 1902.		GROSS POUNDS OF BUTTER SHIPPED OUT OF THE STATE FOR THE YEARS ENDING SEP- TEMBER 30, 1901, AND 1902, SHOWING INCREASE AND DECREASE BY COUNTIES.			
	1901.	1902.	1901.	1902.	Increase.	Decrease.
Humboldt.....	11	12	940,596	888,985	48,892	
Ida.....	4	8	292,210	307,980	15,770	
Iowa.....	11	12	654,869	616,428		38,431
Jackson.....	22	20	1,082,066	1,141,627	85,561	
Jasper.....	9	8	440,509	255,717		184,792
Jefferson.....	5	5	74,810	97,937	18,127	
Johnson.....	4	3	144,894	211,461	67,067	
Jones.....	28	30	3,214,444	4,084,175	819,731	
Keokuk.....	8	7	219,808	292,992	78,184	
Kossuth.....	22	22	2,441,718	1,955,559		286,159
Lee.....			82,988	816,298	738,906	
Linn.....	27	25	1,805,220	1,192,201		115,019
Louisa.....	2	2	842,80	68,910	29,630	
Lucas.....	2	2	700			700
Lyon.....	5	6	396,858	378,184		18,674
Madison.....	2	2	62,682	11,435		51,247
Mahaska.....	2	2	78,020	99,319	21,299	
Marion.....	8	2	78,800	72,861		496
Marshall.....	9	8	644,982	605,221		39,761
Mills.....	2	4	29,412	6,310		23,102
Mitchell.....	11	11	1,740,867	1,894,098	148,936	
Monona.....	1	1	44,577	44,897	290	
Monroe.....	1	1	20,292	41,715	21,423	
Montgomery.....	4	4	175,901	115,797		50,10
Muscatine.....	4	3	93,914	98,619		5,29
O'Brien.....	0	5	450,822	626,465		24,35
Osceola.....	4	5	118,800	231,190	114,390	
Page.....	3	4	367,001	672,674	285,673	
Palo Alto.....	19	20	1,090,012	1,048,991		291,621
Plymouth.....	10	10	735,742	555,840		229,902
Pocahontas.....	12	12	514,028	802,024	287,996	
Polk.....	4	7	450,374	2,078,875	1,628,001	
Pottawattamie.....	9	7	768,119	564,390		201,729
Poweshiek.....	9	6	408,773	406,385		2,438
Ringgold.....	8	2	119,727	20,516		99,211
Sac.....	16	18	887,393	849,046		8,287
Scott.....	4	8	300,023	253,700		41,323
Shelby.....	10	12	814,677	709,450		105,247
Sioux.....	8	7	477,404	614,462	187,058	
Story.....	14	14	1,571,909	1,365,452		216,457
Tama.....	10	9	747,628	671,110		73,418
Taylor.....	5	4	167,222	200,206	32,981	
Union.....	14	14	1,004,807	666,700		308,107
Van Buren.....	3	5	60,142	86,350		23,792
Wapello.....	1	1	219,485	177,359		39,126
Warren.....	6	5	50,315	13,400		36,915
Washington.....	5	5	946,590	276,578		70,015
Wayne.....	5	4	840,815	653,752		207,063
Webster.....	11	7	839,612	496,332		346,280
Winnebago.....	14	15	1,434,116	1,508,568	75,447	
Winneshiek.....	16	15	1,893,404	1,503,568		427,811
Woodbury.....	6	3	3,845,852	3,994,627	148,775	
Worth.....	12	12	1,021,892	956,258		63,579
Wright.....	9	8	1,075,820	728,671		346,849
The State.....	960	920	89,123,697	86,564,961	7,800,466	9,539,182

Net decrease, gross pounds, 2,558,716.

Table showing total net butter shipments of the state for the years 1890 to 1902, inclusive, from Iowa to points outside the state; also increase or decrease as compared with the year preceding.

YEARS ENDING OCTOBER 1.	Net pounds of butter shipped.	Increase over preceding year.	Decrease from preceding year.
1890.....	71,255,798		
1891.....	68,690,716		2,565,080
1892.....	60,112,981		8,577,735
1893.....	54,572,902		5,540,021
1894.....	54,509,417		68,485
1895.....	66,497,108	11,987,691	
1896.....	80,082,916	13,585,808	
1897.....	83,620,081	3,537,165	
1898.....	77,864,337		5,755,744
1899.....	76,620,326		744,011
1900.....	71,719,329		4,901,097
1901.....	74,868,995	3,144,666	
1902.....	72,714,584		2,149,411

Counties shipping more than 1,000,000 pounds, net, of butter in the year ending, September 30, 1902.

1902.	COUNTIES.	1901.
3,355,487	Woodbury.	3,230,515
3,388,707	Jones.	2,700,133
2,680,611	Buchanan.	2,678,638
2,503,524	Clayton.	1,896,678
2,417,627	Bremer.	2,950,322
2,281,208	Chickasaw.	2,353,348
2,244,684	Delaware.	2,236,110
2,056,986	Fayette.	2,052,776
1,950,853	Dubuque.	2,397,400
1,947,337	Butler.	2,296,844
1,741,626	Polk.	378,305
1,642,669	Kossuth.	1,883,043
1,582,612	Mitchell.	1,461,998
1,552,136	Blackhawk.	1,811,390
1,541,837	Hardin.	2,079,390
1,401,448	Palo Alto.	1,621,210
1,267,195	Winneshiek.	1,626,579
1,204,099	Howard.	1,282,692
1,190,589	Calhoun.	1,547,616
1,138,580	Story.	1,320,403
1,096,047	Allamakee.	1,119,311
1,000,572	Winnebago.	1,204,817
1,023,269	Guthrie.	1,515,619
1,005,048	Linn.	1,096,384
1,003,265	Carroll.	706,122
44,308,016	Totals.	45,447,643

These twenty-five counties ship 60 per cent of the 72,714,584 net pounds of butter shipped from the state.

NET BUTTER SHIPMENTS BY COUNTIES AND RANK —AREA OF COUNTIES.

Showing pounds of butter shipped per square mile and rank of counties; also total net butter shipments for the state and net pounds per square mile, for the year ending, September 30, 1902.

COUNTIES.	Total net shipments of butter for the year.	Rank by total lbs. shipped.	Area of square mile in counties.	Pounds per square mile.	Rank by lbs. per square mile.
The state	72,714,584		56,025		
Adair	710,168	36	576	1,234	38
Adams	873,301	20	432	1,994	26
Allamakee	1,096,047	21	658	1,666	28
Appanoose	59,419	86	516	115	19
Audubon	915,002	22	445	2,056	24
Benton	504,081	54	720	700	11
Black Hawk	1,582,186	14	576	2,712	11
Boone	93,318	80	576	162	61
Bremer	2,417,327	5	432	5,596	2
Buchanan	2,690,811	3	576	4,654	3
Buena Vista	892,706	30	576	1,547	30
Butler	1,947,337	10	576	3,381	7
Calhoun	1,190,539	29	576	2,057	27
Carroll	1,003,365	25	576	1,741	29
Cass	310,462	65	576	539	53
Cedar	372,385	61	576	646	40
Cerro Gordo	662,000	39	576	1,149	37
Cherokee	105,568	78	576	186	62
Chickasaw	2,281,208	6	504	452	32
Clarke	14,890	98	432	33	43
Clay	500,899	43	576	1,025	45
Clayton	2,508,524	4	720	3,486	5
Clinton	991,368	26	608	1,636	31
Crawford	906,890	29	720	1,253	33
Dallas	733,914	34	598	1,233	34
Davis	112,287	77	508	223	63
Decatur	19,116	91	534	35	64
Delaware	2,244,684	7	576	3,897	4
Des Moines	248,578	67	418	591	56
Dickinson	588,985	48	405	1,450	35
Dubuque	1,950,858	9	601	3,246	6
Emmet	649,899	40	424	1,536	36
Fayette	2,056,966	8	720	2,866	8
Floyd	806,071	31	504	1,599	39
Franklin	448,696	58	576	785	47
Fremont	2,893	97	509	5	70
Greene	239,243	69	576	415	60
Grundy	567,406	45	504	1,125	41
Guthrie	1,023,299	23	598	1,725	24
Hamilton	9,833	94	576	17	65
Hancock	460,467	57	576	799	48
Hardin	1,541,837	15	576	2,695	13
Harrison	345,561	62	606	568	64
Henry	60,117	85	438	135	14
Howard	1,204,069	18	476	2,529	10
Humboldt	746,747	38	432	1,725	25
Ida	258,708	66	438	597	58
Iowa	537,799	49	534	937	42
Jackson	983,966	27	686	1,433	23
Jasper	214,803	72	720	294	73
Jefferson	83,267	88	432	193	75
Johnson	177,637	74	618	284	71
Jones	8,838,707	1	576	5,393	1
Keokuk	246,113	68	576	427	66

NET BUTTER SHIPMENTS—CONTINUED.

COUNTIES.	Total net ship- ments of but- ter for the year.	Rank by total lbs. shipped.	Area of square miles in coun- ties.	Pounds per square mile.	Rank by lbs. per square mile.
Kossuth	1,642,660	12	977	1,680	25
Lee	885,686	37	512	1,730	34
Linn	1,005,048	24	720	1,395	33
Louisa	58,684	87	407	181	95
Lucas			482		
Lyon	317,074	64	587	541	61
Madison	9,005	95	576	16	95
Mahaska	83,428	81	576	144	82
Marion	61,308	84	576	106	87
Marshall	508,385	58	576	882	40
Mills	5,300	96	444	11	96
Mitchell	1,582,612	18	473	2,846	16
Monona	37,688	8	556	67	89
Monroe	35,040	89	432	81	88
Montgomery	97,271	79	432	225	76
Muscatine	74,389	88	437	170	80
O'Brien	520,330	51	576	918	48
Osceola	194,174	78	400	485	67
Page	541,286	47	557	971	46
Palo Alto	1,401,448	16	576	2,438	15
Plymouth	460,005	56	860	519	68
Pocahontas	673,700	38	576	1,169	39
Polk	1,741,626	11	585	2,978	9
Pottawattamie	474,622	57	960	496	65
Poweshiek	341,221	68	582	586	59
Ringgold	17,338	92	542	31	93
Sac	713,558	35	576	123	83
Scott	213,008	71	455	481	66
Shelby	595,688	42	560	1,010	45
Sioux	516,148	52	769	671	55
Story	1,133,680	20	576	1,977	20
Tama	553,732	46	720	769	53
Taylor	163,171	15	548	306	72
Union	583,888	44	482	1,250	38
Van Buren	30,384	90	484	63	90
Wapello	148,682	76	432	344	73
Warren		112	96	566	98
Washington	233,323	70	568	412	71
Wayne	532,352	50	528	1,017	44
Webster	414,441	59	720	575	60
Winnebago	1,090,572	22	408	2,706	12
Winnebiek	1,297,195	17	694	1,825	21
Woodbury	3,355,487	3	873	3,843	5
Worth	304,888	83	402	2,000	19
Wright	612,084	41	576	1,062	43

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SEVENTEENTH ANNUAL REPORT

OF THE

STATE DAIRY COMMISSIONER

TO THE

GOVERNOR OF THE STATE OF IOWA

FOR THE YEAR 1903.

H. R. WRIGHT,
STATE DAIRY COMMISSIONER.

PRINTED BY ORDER OF THE GENERAL ASSEMBLY.

DES MOINES:
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1903.

LETTER OF TRANSMITTAL.

To His] Excellency, ALBERT B. CUMMINS, Governor of Iowa:

SIR,—In compliance with the law, I have the honor to submit herewith the Seventeenth Annual Report of the Dairy Commissioner.

Very respectfully,

H. R. WRIGHT,

Dairy Commissioner.

Des Moines, November 1, 1903.

EXPENSE OF OFFICE OF DAIRY COMMISSIONER FOR THE YEAR ENDING NOVEMBER 1, 1903.

Dairy commissioner's salary	\$ 1,500.00	
Dairy commissioner's expense	625.98	
Total.....		\$ 2,125.98
Deputy dairy commissioner's salary	\$ 1,000.00	
Deputy dairy commissioner's expense.....	15.24	
Total.....		1,015.24
Assistant dairy commissioner's salary	\$ 1,000.00	
Assistant dairy commissioner's expense.....	1,108.41	
Total		2,108.41
EXPENSE OF MILK INSPECTION IN FOURTEEN CITIES—		
Milk agents' fees	\$ 1,772.00	
Milk agents' expense	175.58	
Milk agents' special work	24.87	
Total.....		1,971.90
OFFICE EXPENSES—		
Printing dairy law	\$ 21.00	
Legal expenses	150.00	
Analyses	90.06	
Miscellaneous	15.21	
Total.....		216.26
Express, freight and cartage.....		108.50
Telegraph and telephone		17.49
Total.....		\$ 7,556.78
*Less salaries.....		3,500.00
Total expenditures from appropriations		\$ 4,056.78
Average monthly expense.....		844.76

*Salaries are not paid from the specific appropriation. The amount appropriated for the biennial period beginning April 1, 1902, was \$3,000.00, of which has been expended in nineteen months, to November 1, 1903, \$3,550.48.

DAIRY COMMISSIONER'S REPORT.

The statistics given in this report are for the year ending July 1, 1903. The statistical portions of former reports have been in each case for the years ending May 1st. This change has been made in the hope of getting more complete statistics and also in the hope of getting this volume into the hands of dairy people while the statistics are of some value.

The statistics in regard to railway shipments of butter, both in this report and in former reports, are for the years ending September 30th, in each case.

It is the practice of this office to correct the creamery list down to November 1st.

It has also been the practice of this office to avoid rigidly anything in the way of padding either the creamery list of the statistical tables, and so far as the figures are given, they are, therefore, reasonably correct. The law requires creameries and renovated butter factories to report within thirty days after receiving the blank from the dairy commissioner. If these creamery reports could be secured promptly, the annual report of the dairy commissioner could easily be in print by October 1st, instead of January 1st, which is the usual time.

CITY MILK INSPECTION.

The city milk inspection, which is carried on under the direction of this office, in fourteen cities of the state, costs about \$2,000.00 per annum. Except in the city of Des Moines this inspection is carried on by the local inspectors with little or no real supervision on the part of the dairy commissioner and practically is confined to testing the milk by means of the Babcock test in order to ascertain whether the same has been watered or skimmed, or whether the cream that has been sold tests up to the legal standard of 15 per cent. In one or two

towns, the department has enlisted the aid of the local health department in carrying on some investigations in regard to the adulteration of the milk by the use of preservatives. Experiences in Iowa and in other states has shown that a frequent inspection of the milk sold in the cities tends to a much better quality of milk so far as regards the amount of cream it contains, but under existing conditions it is impossible to make sure that the milk sold in the city is not adulterated with preservatives. A number of analyses have been made, particularly of milk from Des Moines, and very little milk has been found containing preservatives. The efficient milk agent at Ottumwa, Mr. E. B. Hill, together with the city physician of that town, have done very efficient work in inspecting the milk sold in Ottumwa, and one of the milkmen of the city, on complaint of the milk inspector, was arrested and fined for selling milk containing formaldehyde.

The growth of the city milk inspection in this state is indicated by the following table showing the number of permits for milk dealers issued in the years from 1894 to 1892. The years end in every case on the 4th of July:

1894	1895	1896	1897	1898	1899	1900	1901	1902	1903
359	491	566	620	574	676	714	784	821	783

The number of permits issued since July 4, 1903, is 633.

The milk inspection carried on under the direction of this department affects about one-seventh of the population of the state, as will be seen by the following table:

CITIES.	POPULATION.	INSPECTOR.
Burlington	23,201	Dr. W. C. Hummell.
Cedar Rapids	25,656	Dr. J. W. Griffith.
Clinton	22,698	W. L. Cousins.
Council Bluffs	25,802	W. A. Groneweg.
Davenport	35,254	H. J. High.
Des Moines	62,139	Hal M. Heaton.
Dubuque	36,297	Dr. A. G. Staples.
Fort Dodge	12,162	D. C. Benjamin.
Keokuk	14,641	A. A. Bland.
Marshalltown	11,544	Dr. E. M. Singleton.
Muscatine	14,073	Dr. John Tillie.
Ottumwa	18,197	E. B. Hill.
Sioux City	33,111	O. P. McCray,
Waterloo	12,580	Theo. Peek.
Total....	347,355	

The most important work undertaken by the dairy commissioner's office is that of creamery inspection. This state has a law requiring the operator and manager of a creamery, or cheese or condensed milk factory, to keep his utensils and buildings in a clean and hygienic condition. The evident intention of this law is to provide a penalty to be inflicted upon the responsible party in case a creamery is not kept in a fit condition to be the place of manufacture of human food. This state has a great many creamery plants that were built a considerable number of years ago, and some of these plants have been neglected. The work of inspection has been very largely done by the assistant dairy commissioner, and it has been the policy of this department to insist that every creamery, so far as we have been able to visit them, shall be properly kept. In a few instances the management have been asked to choose between immediate prosecution and rebuilding the creamery. In most cases, however, butter makers and managers have been anxious and willing to remedy the defects when the same have been pointed out to them, and a considerable improvement in a large number of creameries, has been effected. A very large number of plants have been found to be well kept and operated, and a few were not up to standard of cleanliness demanded by a reasonable interpretation of the spirit of the law. The butter makers of a creamery in Butler county and the manager of a creamery in Delaware county were each fined \$25.00 and costs for maintaining creameries that were inexcusably unclean.

WORK OF ASSISTANT DAIRY COMMISSIONER.

The work to be done by the assistant dairy commissioner is not specified in the statute authorizing his appointment, and a very large part of his efforts have been in expert instruction and assistance to a large number of butter makers. The present assistant commissioner, Mr. P. H. Keiffer, since his appointment on January 1, 1903, has visited 174 creameries, some of them twice and a few of them three times. So popular has been his work among the creameries that demands for his assistance have been much more numerous than he could meet. The state should have at least five assistant commissioners, if it desires to carry out fully the inspection of creameries and the instruction and assistance of butter makers and patrons. There is given in this report some suggestions by the assistant commissioner

founded upon experiences which he has met in the discharge of his duties and which it is believed will be helpful to butter makers in general.

FARMERS' INSTITUTES.

In October, 1902, the dairy commissioner sent circular letters to the officers of the farmers' institutes of the state urging them to use at least half a day of their sessions in the discussion of the dairy business and offering the assistance of the department without expense to the institutes. A much larger number of institutes than ever before devoted a part of their time to the dairy subjects and the dairy commissioner attended and addressed thirty-one farmers' institutes during the winter season and sixteen farmers' meetings during the summer and early fall. While Iowa is the greatest dairy state in the union, judged by the aggregate amount of butter produced, she is, it is believed, just at the beginning of a probable, certainly a possible, development along dairy lines that will make the record of the future surpass that of the past, especially in the profits derived from the industry. While the time of the dairy commissioner is largely taken up in the other business of his office, certainly the spirit of the law authorizing his appointment demands that he should assist in every way possible in the work of pointing out to the farmers of the state the possible profits in dairying and the way to attain them, and for this reason he has spent considerable of his time in attending farmers' institutes and other similar meetings.

The condition of the dairy business in the state is not all that could be desired. As frequently pointed out in these reports, the dairy business booms when other lines of agriculture return but meager profits. During the year up to 1898, prices of farm products other than butter were extremely low and uncertain. From and including 1898, prices of other farm products have been very high. This is the chief factor which accounts for the present ebb in the dairy business. Without doubt, the introduction of the hand separator and the centralizing plants have reduced the output of creamery butter in this state, as is pointed out elsewhere in this report under the discussion of hand separator statistics. One of the striking features which the statistics of the last several years show is that the number of skimming stations in Iowa is steadily and rapidly decreasing.

In the boom times of creamery building, beginning about 1896 and before the advent of the hand separator and the system of shipping cream by rail from patron to creamery, about the only method by which a creamery could increase its product was by the use of the skimming station system. There have been a number of disastrous failures of the creamery companies that have operated a central plant and numerous skimming stations. There have been other failures, more or less complete and equally disastrous in the aggregate, of smaller concerns with only a few skimming stations, each. If one may judge the future by the past history of the skimming station idea, it seems to be only a question of a few years until the skimming station will be a thing of the past. It is difficult to make a general statement that will apply in every case, but it seems entirely safe to assert that it is bad policy at this time to invest any money in a skimming station. If there is patronage enough at any point to warrant the building of a skimming station, the patronage will be entirely sufficient to warrant the erection of a co-operative creamery. The difference in expense between building a skimming station and a creamery is very small and the difference in expense in operating them is still less.

There are two creameries in the state, within fifty miles of each other and operating under very similar conditions, but upon entirely different plans. Each of them has about six hundred patrons, but one of them has not only a churning plant but eight skimming stations. This creamery has an investment in the creamery of \$5,000.00 and reports the average value of the skimming stations at \$2,500.00, which makes the total investment \$25,000.00. This creamery makes 175,000 pounds of butter. The other creamery has an investment of \$5,000.00 in the creamery and makes 540,000 pounds of butter. It is evident that the expense in the first of these plants must include the wages of eight skimming station operators, as well as the wages of the men who operate the churning plant, and hence the expense of operating this system of skimming stations will be very much larger than the expense of operating the other creamery, which makes three times as much butter. And it is evident that when two creameries such as these get into competition, that the creamery with the skimming stations must certainly give way to the creamery that has no skimming stations.

The creamery operator who invests his money in a skimming station, in a very large number of cases, is almost certain to lose a large part of his investment.

A large number of centralizing plants are now in operation in this state and a still larger number are apparently about to be built and the question to be settled in the dairy business of Iowa is whether these plants will take the place of the smaller creameries of the state.

The dairy department of the Iowa State College has been carrying on a scoring contest during the year 1903 in which this department was invited to assist. The assistant dairy commissioner has been at Ames during the scoring of each lot of butter and has endeavored to visit those buttermakers whose butter has shown serious defects and to locate the cause of the defects and to remedy them. The results obtained have been very gratifying and valuable.

ASSISTANT DAIRY COMMISSIONER.

I beg to submit an account of a few of the experiences I have encountered during the past few months which may be found beneficial to those who are interested in the manufacture of butter.

At the first scoring of the Ames contest some butter was exhibited which scored very low. One package in particular scored 78 points, due to a tallowy flavor, and the butter had the appearance of being process butter. Another package had a score of 88, which had a very peculiar, unclean flavor, not one which might be termed a wintry flavor, but a very stale flavor so much different from any other butter there that it was easy to carry the impression of the flavor in one's mind. I visited both these creameries, and in the first one visited—the one scoring 78—I found that the room where the butter was made where the cream vat was located and the cream was kept, had the same strong tallowy sickening flavor, due possibly to not being properly ventilated and the room not being kept strictly clean. The churn was in very bad condition and had the same odor as the room. These people immediately bought a starter can and secured some culture, bought a new churn and cleaned up the room and the result at the next scoring was decidedly better.

The importance in quality was recognized by the commission men, and so notified the secretary of the creamery.

In visiting the other creamery alluded to, I found it rather a difficult matter to locate the cause of that peculiar flavor in the butter, because the machinery was practically new, the building was clean inside, and especially where the butter was made. But I found the milk room to be in a rather unclean condition, but could not lay the blame wholly to that. I asked the butter maker whether or not he used a starter for ripening his cream and he said he did not, but it being in the spring of the year when it was still cold, it was necessary for him to use something in order to ripen his cream for churning, and I rather suspected that he was using buttermilk, but he said to me that he was not. I told him I could not understand where the peculiar flavor got into his butter, being a whole milk plant and the milk arriving in good condition. I finally got him interested enough in the matter so that he admitted that he used something in the cream and I ask him to show me what it was. He went to his cooling room and brought out a ten-gallon can of cream which was fairly frothing over at the top. It had a doughy appearance and a flavor identical with his butter, which he very readily recognized as being the same flavor as that of his butter. When I asked him how he happened to be using that to ripen his cream, he said that during the winter the cream would not ripen, so he saved out a ten-gallon can of cream every morning, which he continued doing during the whole winter. This produced a peculiar bacteria in there, which predominated and controlled the flavor of his cream and butter. He stopped using this as a starter, and he also made a good showing at the next scoring.

Another incident which I wish to call to the attention of butter makers is the temperature of churning and the degree of acidity of the butter at the time it is churned. In visiting a certain creamery one morning, I found that the cream was fairly sweet, did not contain very much acid, but did not take the temperature of the cream. The butter maker ran the cream into the churn and started to churn. After the churn had revolved a few minutes he stopped it, and I supposed that it was to pull the plug and let the gas out, but noticing the churn was not set in motion again, I examined to see what the trouble was, and found that the butter had already come, that the cream was churned. I waited until he drew off his buttermilk, at which time I took a sample of his buttermilk, made a test of it there, and we found that there was over 1 per cent butter fat in the

buttermilk, due undoubtedly to the high temperature of the cream when it was churned.

In relation to starters I wish to say that the butter makers who are using starters in this state are making a high and uniform grade of butter and are having practically no fault found with their goods by their commission houses. After inspecting the milk at a certain creamery one morning, I found that the butter maker had an excellent starter. It is customary for him to have an excellent starter. This starter was used to ripen his cream out of which he made a package of butter to be sent to the Ames contest. I took a pint jar full of this starter down to his neighboring creamery and got his neighbor to use it to ripen his cream with in making his butter to be sent to the Ames contest for scoring. He was very particular in selecting his skim milk for this starter, pasteurized it and when cooled down to the proper temperature added the starter. The next morning he made his butter for the Ames contest. As far as I was concerned, I gave this matter no more attention for the time being. The next week I was at Ames to take note of the scoring.

After the scoring was finished, there were five tubs of butter found to have scored very high. Three scored 98 and two scored 98 1-2. It was found that one of the 98 1-2 butter was made by the man from whom I got the starter and the 98 butter was made by the man to whom I took the starter. After the butter was scored the second time in New York and the average taken for the two scorings, the man to whom I had taken the starter won out, the other one being a very close second.

There are other things besides the starter that are very important in butter making, among which are the milk pump and pipes that connect the milk to the tempering vat. I had an experience this summer in this connection that fairly frightens me when I recall my butter making days. The particular creamery of which I am now speaking has one of our best butter makers in the state, a man who always scores high, keeps his creamery in a good clean condition and has the best of standing among his patrons and board of directors. But for some reason or another, he found himself making butter that had a very strong musty flavor,—so bad that it was almost impossible to eat it. I undertook to assist him in running down the cause of this musty flavor, inspected his creamery very carefully in the afternoon and still was not satisfied that I had found the cause of this flavor. The next morning I inspected the milk very closely

as it came in and the butter maker started the separators, and after they had been in operation a few minutes, to test the cream, I found that it had that very strong musty flavor. I was quite certain that I had let no milk pass which was not A-1 so that I concluded the trouble must be in the milk pump and pipe, but the butter maker assured me that he steamed them out every day (and I am satisfied that he did) and that the trouble could not be there, but that it might possibly be due to some feed that was fed to the cows. But as I had not been able to discover any bad odors in the milk, I was quite confident that this peculiar flavor was added to the milk after it had left the receiving vat, and so informed the butter maker, and told him if he would stop his machinery and let us clean the pump I thought that we could avoid trouble. He stopped the machinery and we took the pump apart, and he immediately discovered where his musty flavor came from. It was so strong that we could smell it in the creamery. We took the hose and steamed the pump for nearly five minutes but were unable to kill the musty odor, so I suggested that we take the pump all apart and burn it out. The farmers who hauled their milk that morning came in and also the directors, as they had been notified the previous afternoon, who all took part and helped us take the pump apart. I then threw the milk pump, which was an ordinary rotary pump, into the fire box of the boiler and burned it out, and every piece of pipe was put in the fire and burned out, after which, when it was cooled, we adjusted the pump and pipe after the delay of about an hour and set the machinery in motion and got as fine cream from those separators as it is possible to get from ordinary milk. This man has since scored very high in recent contests, and we were all greatly pleased to locate the trouble. This merely goes to show that with all the care that may be exercised in a creamery, one is liable to overlook matters that are of great importance, which are considered minor matters at the time.

A certain creamery had been writing to the dairy commissioner and myself in regard to his tests, which were very low, stating that some of the milk had tested as low as 1.8 per cent. I visited the creamery as soon as possible and told the secretary and manager that I wanted to take a sample of every man's milk that had tested below 3 per cent. They furnished me bottles for the purpose and I took samples from twenty-four pa-

trons whose milk had been tested below 3 per cent. When the milk was in I went to the tester to test the same, but found that the spindle was loose from the circle which holds the bottles. Upon starting the tester, the spindle would start first, followed by the wheel, and while it was possible to speed the spindle, the matter of estimating the actual speed of the bottles was all guess work. I informed the parties that I could not make the tests with this tester and refused to do so, but took the samples I had to another creamery, the manager going with me, and made the test there in a machine that was all right, and the difference in the result of my tests and that of the manager was considerable. My lowest test was 3.4 per cent and my highest 4.4 per cent, which proved to my mind that the motion of the loose tester was too slow to separate the fat.

I notice that some butter makers occasionally steam their churn by taking a steam hose and opening up the cover of the churn, holding the steam hose in hand and letting the steam blow into the opening of the cover. This way of steaming does not have the required effect upon the churn, because it is impossible to heat the churn to any extent and the presence of the steam there has no effect upon the unclean bacteria. The way to steam the churn is to fasten the cover down and put the steam hose in the bung hole of the churn and fasten it and then steam the churn for fifteen or twenty minutes in this way and heat it up so that the wood will be fairly hot on the outside.

The preceding incidents are only mentioned in order to show the different causes for trouble in the creameries. No trouble ever arises for which there is not a cause; and when properly investigated the cause can be located and corrected.

P. H. K.

OLEOMARGARINE.

The new national oleomargarine law has been in force since July 1, 1902, so that statistics are at hand for the year ending June 30, 1903. The make of oleomargarine for the year just preceding the new national law was 126,315,427 pounds. For the first year under the new law the make was 71,211,344 pounds, a decrease of 55,104,183 pounds, or 44 per cent. The following table shows the number of fifty-pound tubs of oleomargarine made during September in the Chicago oleo factories:

MONTHS.	1903	1902	1901
July.....	18,562	53,100	75,849
August.....	22,360	27,800	63,268
September	34,096	37,100	80,594

The total make for the whole United States for the months of July and August during the last three years has been as follows:

1901.....	15,814,835 pounds.
1902.....	9,002,054 pounds.
1903.....	5,795,125 pounds.

A careful study of the foregoing figures will show clearly that there has been a very great decrease in the amount of oleomargarine made in the United States, and that the decrease seems to be more and more the longer the law is in effect. For many years the opponents of the oleomargarine traffic have been putting forth the claim that there was a small legitimate trade for oleomargarine sold as such, but that the bulk of the oleomargarine trade was only possible when the oleomargarine was colored in imitation of butter and sold so that the ultimate consumer was deceived into thinking that it was butter. The figures from the internal revenue department given above seem to prove that this assertion is borne out by the decreased sale of so-called "uncolored oleomargarine" even when the oleomar-

garine was given a slight yellow color as has been the case with most oleomargarine put on the market since July 1, 1902.

It was to be expected that manufacturers of oleomargarine would make every effort to avoid the regulations and restrictions of the new law and that they would also use every legal means to weaken the value of the law by adverse court decisions. A number of expedients were resorted to by them, but the only one that seemed to be effective was the use of palm oil in very small quantities. This was successful in evading the spirit of the law until a chemist was found who could detect in the oleomargarine the small quantity of palm oil that had been used.

Following the discovery that certain manufacturers of oleomargarine had been using palm oil, the internal revenue department assessed against a number of them very large sums under the feature of the law which requires the payment of ten cents per pound on oleomargarine having in it any "artificial coloration." These sums of money they have been obliged to pay and they are now suing the government for the return of the money so paid and these suits, of course, raise all the points that have been urged against the oleomargarine law, and the determination of them will go very far towards settling the exact meaning of the law and determining the future effect of it. In the meantime the make of oleomargarine decreases still more because the manufacturers are not using the palm oil now as it is alleged by the department of internal revenue they were doing last year.

The oleomargarine interests have also succeeded in getting a case before the Supreme Court of the United States on appeal from the United States District Court, Southern District of Ohio, the determination of which will have a very important bearing on the future success of the law. While it is true that the law has been a large part of what its supporters hoped for and that the enforcement of it has been rigidly carried out by the internal revenue department, and all the suits, under this law so far have been determined in favor of the support of the law, yet it is also true that the butter interests should not now give up the fight against oleomargarine, and must be warned against assuming that the battle for honesty in the sale of both butter and oleomargarine has been won. The oleomargarine interests are, as always, well supplied with money and loth to give up a business that has made them wealthy, and they are certain to use every possible means to avoid the enforcement of the law, to weaken its effect by adverse court decisions and if possible to have some

of its obnoxious features repealed. The dairy interests should be more than ever on guard so that we shall not lose what has been obtained by most strenuous efforts during the past four or five years. The National Dairy Union and its officers who have led in the fight for the recent oleo law, have proved themselves to not only earnest but successful opponents of the enemies of the dairy industry. For reasons of self-interest the organization ought to receive the active financial support of every man who believes that oleomargarine ought to be sold for what it is, and not, as has been the case for so many years, sold for and in the place of butter.

For a considerable number of years there have been scarcely any retail dealers in the state of Iowa; not more than two or three licenses have been issued each year. The reason for this is that it was extremely easy in Iowa to convict a man for the sale of colored oleomargarine and practically all the oleo put on the market was of this variety, hence, no dealer would take out a license if he fully understood the Iowa law, and the fact that the dairy commissioner would certainly find him out and easily succeed in having him fined for selling yellow oleomargarine. As a result of the effort made by all manufacturers of oleomargarine immediately after the new law went into effect and of their representations and misrepresentations to Iowa dealers in regard to the Iowa law, a large number of grocery and meat market men in all parts of Iowa, but principally in the large cities, took out licenses for the sale of oleomargarine. It will be remembered that the new law reduced the retailer's license fee from \$48.00 a year to \$6.00 a year. Two hundred and five licenses were issued in Iowa in the year ending June 30, 1903. It was early discovered that only a few of the dealers that had taken out licenses were selling any large quantities of oleomargarine. It was not thought best to make a crusade against the retailers, but rather to make one case against a prominent dealer who would be certain to oppose prosecution and if possible to have the case carried to the supreme court and a decision rendered on that feature of our law which is held to forbid the sale of oleomargarine "having a yellow color." There is no question in regard to any state law which forbids the sale of oleomargarine which has been artificially colored in imitation of butter, but there seems to have been no decision rendered by any court of last resort which bears directly upon the part of the Iowa law mentioned above. Early in January the dairy commissioner purchased from the Armour

Packing Company in the city of Des Moines a quantity of uncolored oleomargarine, which, nevertheless, had a considerable tinge of yellow, and after some effort an indictment was secured charging the Armour Packing Company with having sold oleomargarine "having a yellow color." The commissioner was assured that the Armour Packing Company was as anxious as himself to have the supreme court pass upon this feature of the law at the earliest date possible. However, this desire on the part of the Armour Packing Company has not prevented their attorneys from using every technical means to delay the suit. The first trial of the case resulted in a disagreement of the jury; a jury under peculiar instructions. The second trial, before the same judge, but with slightly different instructions to the jury, resulted in a conviction. The Armour Packing Company then interposed an objection to the form of the indictment, an objection which had nothing whatever to do with the meaning of the oleo law, but was simply a technical error in wording the indictment which compelled the court to set aside the verdict. Instead of dismissing the case, as he might have done, the judge sent the indictment back to the grand jury for correction. On the meeting of the grand jury in September the indictment was again returned and again objected to by the attorneys for the Armour Packing Company and up to this date, November 1st, the case has not come to trial. However, upon convicting the Armour Packing Company the dairy commissioner sent out the following circular to the 205 dealers in the state:

DES MOINES, IOWA, May 12, 1903.

DEAR SIR,—From the records of the Internal Revenue office I understand you are selling so-called "uncolored" oleomargarine, and this letter is addressed to you for your information in regard to the laws of this state governing the sale of oleomargarine, or substitute for butter.

One of the provisions of the law is that the substitute for butter sold must not have a yellow color, and this department holds that this provision means that it must not have any shade of yellow. In order that the courts might pass upon this phase of the law a test case was made against the Armour Packing Company in Des Moines, upon the sale of a tub of "uncolored" oleomargarine, which nevertheless had a slight shade of yellow color. On May 8th this corporation was convicted on an indictment charging the sale of oleomargarine "having a yellow color."

It is the duty of the dairy commissioner to enforce the law against the sale of oleomargarine in this state. I have refrained from making suits against the numerous dealers until this test case could be decided. This case having resulted in conviction, I am sending you this statement, in the belief that you will, without further efforts on the part of this office, desist

from selling oleomargarine having any shade of yellow color, whether it be called "colored" or "uncolored." Respectfully,

H. R. WRIGHT,
Dairy Commissioner.

A considerable number of the men who held licenses in the state answered this circular, saying that the sale of oleomargarine was not a success with them and had been only an experiment, the result of which would prevent them from attempting the sale of oleomargarine in the future. On October 15, 1903, there was not a single license for the sale of oleomargarine held in the Northern District of Iowa, and only six in the Southern District of Iowa. There will doubtless be a few more licenses taken out before next July. The dairy commissioner hopes to secure a final conviction in the case mentioned above, and a supreme court interpretation of the law which will support the contention that a man may not sell oleomargarine in Iowa if it has a yellow color.

RENOVATED BUTTER.

LIST OF RENOVATED BUTTER FACTORIES.

COUNTY.	LOCATION.	FIRM NAME.	POSTOFFICE ADDRESS.
1 Calhoun	Rockwell City.....	Andrew Wood Co.	Rockwell City
2 Clayton	McGregor.....	The J. D. Bickel Produce Co	McGregor
3 Dallas	Redfield.....	Smith Produce Co.	Redfield
4 Des Moines	Burlington.....	Iowa Grain & Produce Co. ...	Burlington
5 Dickinson	Spirit Lake	The Stevens Co.	Spirit Lake
6 Keokuk	Keota.....	Keota Produce Co.	Keota
7 Lee	Keokuk	Iowa Pure Butter Co.	Keokuk
8 Polk	Des Moines.....	E. M. Ellingson Co.	Des Moines
9 Polk	Des Moines.....	Schermerhorn-Shotwell Co.	Des Moines
10 Polk.....	Des Moines.....	MacRae Bros	Des Moines
11 Wayne	Hameston.....	Jas. L. Humphrey, Jr.	Hameston
12 Washington	Washington	T. L. Emory & Son.	Washington
13 Woodbury	Sioux City	N. R. Hathaway	Sioux City

The foregoing table shows the names and locations of the thirteen process butter factories of the state of Iowa. All of these factories have been in operation for the year ending July 1, 1903, and have made to this office quite complete reports of the amount of business done, and the table given below shows the aggregate for the state. For obvious reasons the amount of business done by each factory is not given. It is sufficient to say that the product of these factories ranges in amount from

50,000 pounds to 2,250,000 pounds each, and that seven of them put out half a million pounds of butter each, annually.

BUTTER.	Year ending July 1, 1902—reports from nine factories	Year ending July 1, 1903—reports from thirteen factories.
Pounds of renovated butter made.....	4,390,388	9,183,456
Average per factory	503,376	707,183
Sold for consumption in Iowa.....	991,333	2,168,276
Shipped outside the state.....	3,549,055	7,024,174

It is impossible to state just how much of the stock from which this butter was made was produced in Iowa, for the reason that some of it changes hands a number of times before it comes to the process factory and so the renovator cannot tell the origin of the butter. Perhaps not more than one third of it is Iowa butter originally.

NATIONAL STATISTICS.

Number of pounds of renovated butter made.....	54,658,790
Total number of factories, about.....	63

The managers of these factories have shown a disposition to obey in all its features the United States Renovated Butter Law, although they have objected very strenuously to some features of the law, as well as some of the rulings of the Secretary of the Treasury and the Secretary of Agriculture. Their business, moreover, shows a remarkable increase over the business done in the previous year. Attention is called to the fact that the figures for the year ending 1903 are statistics for the first year under the new renovated butter law and the figures for the year ending July 1, 1902, are the statistics for the year immediately preceding the operation of the United States Renovated Butter Law. This large increase is doubtless due to the fact that before the law went into effect butter was renovated in a small way by a very large number of factories. The taxing feature of the law has served to concentrate the business in the hands of the larger operators, as will be clearly shown by the average product of the thirteen factories of the state. There is every reason to believe that the business of renovating butter and selling the same is one of the most profitable branches of the dairy industry at the present time. In this connection there is given herewith

a letter from the Secretary of Agriculture to the Secretary of the National Association of the Process Butter Manufacturers in answer to a request on the part of the process butter manufacturers that the word "process" might be substituted for the word "renovated" in branding the product when it is put upon the market. Further experience has shown that the Secretary of Agriculture is right at least when he says "Evidence is constantly accumulating that full and cordial compliance with the existing regulations is no real impediment to the business. * * * Those who keep the name 'renovated butter' most prominent in all their transactions and especially in the retail trade, are now doing the best business."

WASHINGTON, D. C., January 6, 1903,

[Copy of letter to Mr. W. S. Goodhue, Secretary of the National Association of Process Butter Manufacturers, Chicago, Ill.]

DEAR SIR,—Referring to the interview with yourself and your associates of the executive committee of your association on the twentieth of last November, and correspondence which has ensued, I wish to assure you that full and earnest consideration has since been given to the matters presented. It has been my aim to study, in all its aspects, the fifth section of the Act of Congress approved May 9, 1902, commonly known as the Oleo Law, with reference to the provisions and purposes of that section and the duties thereby assigned to the Secretary of Agriculture.

The manifest purpose of the section named is two-fold: First, to insure the food product now known by law as "Renovated Butter" or "Process Butter" (as defined in section 4 of the same act), being healthful and wholesome, by subjecting the materials going into the manufacture of the same, the factories and storehouses, and the products of such manufacture, to sanitary inspection at the discretion of the Secretary of Agriculture; second, to cause the manufactured product to be marked, labeled, and branded "in such manner as may be prescribed by the Secretary of Agriculture," with the object of maintaining the identity of this particular kind or grade of butter for the benefit of all persons handling the same, including the ultimate purchasers for consumption.

It is not understood that your committee or the members of your association made any serious objection to the first purpose stated. On the contrary, I have been gratified to find that, during the half year that this law has been in operation, the officers authorized by me to perform this inspection service have been courteously received and given every facility for the proper discharge of their duties. Manufacturers have, indeed, appeared to favor this inspection, and have made a point of advertising the fact in connection with the sale of their products. The inspection feature of the law and its administration seem to require no further present consideration.

The "needful regulations for carrying this section into effect" were formulated and promulgated in conjunction with the Secretary of the Treasury. The sole object in this connection was to prescribe such "marks, labels or

'brands'' as would accomplish the spirit of the law, as recognized in the second purpose above described. In so doing, the counsel and advice of the Attorney-General was sought, and the ''needful regulations'' received the approval of that officer.

The special request of your committee was to amend the existing regulations so as to change the required name and marking of the product from ''Renovated Butter'' to ''Process Butter.'' It is deemed inexpedient to change the regulations in this particular. No objection is made to the use of the words ''Process Butter'' by the manufacturer in describing and marking his product, but the regulations prescribe that this shall be in addition to, and not in place of, the words ''Renovated Butter,'' and in no way more conspicuous. ''Renovated Butter'' has been established as the government designation and for the required marking, because it is correctly descriptive of the product, significant, and fulfills the purpose of the law, while it is also approved by public opinion. Several states have laws upon their statute books which require this commodity to be distinctly marked by this name wherever sold or exposed for sale. This fact undoubtedly had influence upon the congress in connection with this legislation. That such state laws meet with public approval is shown by the failure of repeated attempts to repeal them. To adopt a name and manner of marking for general use at variance with existing laws in several states, would result in confusion, prove obstructive to business, and be detrimental to the interests of interstate commerce. The state officials known as Dairy Commissioners and Food and Dairy Commissioners have been consulted, and their opinions are practically unanimous in favor of the existing regulations. They regard the name and marking now required as accomplishing the desired end and as satisfactory to the vast majority of persons concerned. On the contrary they consider the name ''process'' indefinite, almost meaningless, unsuited to the manifest purpose of the law, and tending to defeat its main object. Other representative men have expressed like views. It seems proper also to consider the sentiments of prominent organizations of dairymen, representing the producers of untaxed butter, whose interests the congress undoubtedly had in view when framing the law in question. The expressed sentiment of those bodies, so far as ascertained, including those in a number of important dairy states, is equally unanimous in favor of ''Renovated Butter'' as the required mark and brand of this product.

Practical difficulties in administration preclude the use of two names, together or alternately, in equal prominence, for a single article which is the subject of legislation, taxation, and surveillance with a view to regulation and commercial identification. After careful consideration, ''Renovated Butter'' was selected as the official and legal designation of the product, and for its conspicuous branding. Nothing has occurred since the law went into effect, in connection with its administration and no new views have been advanced, which seem to justify a change. It is believed that this fundamental regulation is essential to the efficient administration of the law.

The same reasons apply to markings required upon renovated butter for export. The suggestion of one name and manner of marking for domestic trade and a different one for the same article when exported, is deemed entirely impracticable. Such a dual arrangement would be an obstruction

to business and would complicate administration and add greatly to its expense. The simplest and most sensible rule on this subject is that in the existing regulations: "All renovated butter for export must be stamped and marked the same as for the domestic market."

In making these decisions it is my conviction that while they accord with the spirit of the law, they are not detrimental to the best interests of manufacturers. Evidence is constantly accumulating that full and cordial compliance with the existing regulations is no real impediment to the business. Although the changes in markings and appearances were not fully understood by retail merchants and their customers in July, the temporary shrinkage in trade has been overcome where proper effort has been made. Manufacturers and their agents who have exerted themselves to explain the facts and convince customers that they were getting the same goods as before, or better, are not now finding the name and markings obstructive. On the contrary, those who keep the name "Renovated Butter" most prominent in all their transactions, and especially in the retail trade, are now doing the best business. The timidity of retailers can be removed by a little effort, and if manufacturers are able to give satisfaction as to the quality and price of their product, they will, it is confidently believed, soon find that dealers and consumers are alike indifferent to the substance and style of labels and marks, except for the purpose of recognition and identification.

It is my opinion that renovated butter should be regarded as a legitimate food product and that no needless restriction should be placed upon its manufacture and no obstruction to its trade, so long as it is made and sold under its right name.

The intent of the law is evidently to require clean and sound materials, sanitary methods of preparation, and a wholesome product. And, in addition, such plain marking and handling at all points as to insure complete identification and honesty in trade, whether in domestic markets or for purposes of export.

I shall be pleased to see that all regulations are made and enforced necessary to accomplish these essential features and beyond this that, in all minor matters, the wishes and convenience of manufacturers and merchants are duly considered and complied with so far as practicable. Rulings have already been made which show my purpose in this respect. Arrangements will be made at once for packing in half-pound prints, and other requests will receive proper attention. This can be done without material changes in the existing regulations. No revision seems to be necessary at the present time.

In performing my share of this administrative duty I shall endeavor to convince the members of your association that I act without prejudice and with the earnest purpose of obeying the law in letter and in spirit, and of doing justice to all concerned.

Very truly yours,

JAMES WILSON,
Secretary.

The prices of renovated butter for the year ending November 1, 1903 are shown in the table below and compared with the prices of creamery butter.

DATE.	Renovated butter.	Creamery extra.
November, 1902	21.0 c.	26.5 c.
December, 1902	21.9 c.	29.2 c.
January, 1903	21.5 c.	27.6 c.
February, 1903	18.57c.	28.0 c.
March, 1903	18.80c.	28.60c.
April, 1903	18.87c.	27.25c.
May, 1903	18.0 c.	24.0 c.
June, 1903	18.40c.	21.6 c.
July, 1903	17.75c.	20.13c.
August, 1903	17.0 c.	19.40c.
September, 1903	17.0 c.	20.75c.
October, 1903	17.0 c.	21.0 c.

SHOWING AVERAGE MONTHLY PRICE OF FANCY WESTERN CREAMERY BUTTER IN NEW YORK MARKET.

MONTH.	Twelve months ending Nov. 1, 1886.	Twelve months ending Nov. 1, 1886.	Twelve months ending Nov. 1, 1887.	Twelve months ending Nov. 1, 1888.	Twelve months ending Nov. 1, 1889.	Twelve months ending Nov. 1, 1900.	Twelve months ending Nov. 1, 1901.	Twelve months ending Nov. 1, 1902.	Twelve months ending Nov. 1, 1903.
November	\$.2510	\$.2390	\$.2112	\$.2325	\$.2337	\$.2600	\$.2487	\$.2412	\$.2650
December	.2440	.2500	.2250	.2290	.2160	.2720	.2540	.2510	.2920
January	.2519	.2296	.1900	.2040	.1975	.2460	.2332	.2425	.2762
February	.2344	.2000	.2050	.2042	.2100	.2500	.2250	.2362	.2600
March	.2670	.2185	.1900	.1987	.2075	.2550	.2212	.2340	.2380
April	.2000	.1650	.1890	.1960	.1962	.1960	.2006	.2325	.2725
May	.1785	.1572	.1530	.1590	.1790	.2012	.1900	.2275	.2200
June	.1794	.1550	.1500	.1687	.1831	.1950	.1925	.2195	.2160
July	.1770	.1505	.1500	.1687	.1835	.1960	.1900	.2131	.2012
August	.1980	.1571	.1675	.1890	.2000	.2100	.2050	.1960	.1940
September	.2125	.1900	.1980	.2025	.2262	.2150	.2110	.2170	.2075
October	.2294	.1850	.2290	.2235	.2400	.2190	.2200	.2362	.2100
Average value per lb. for each year	\$.2190	\$.1882	\$.1885	\$.1971	\$.2065	\$.2278	\$.2165	\$.2416	\$.2417

THE PRODUCT OF IOWA'S CREAMERIES.

It is impossible to get complete returns from all the creameries. The following table shows the figures of milk and cream received and butter made at 601 of the 661 creameries of the state, and in a general way at least shows the relative amount of milk and cream produced and brought to the creameries in each county. The reports show very generally that four pounds of cream are necessary to make one pound of butter and so about 17,500,000 pounds of butter or about 29 per cent of all that was reported was made from cream instead of from milk.

TABLE SHOWING NUMBER OF POUNDS OF MILK RECEIVED, NUMBER POUNDS OF CREAM RECEIVED, POUNDS OF BUTTER MADE, POUNDS SOLD TO PATRONS IN IOWA AND SHIPPED OUTSIDE THE STATE, SO FAR AS REPORTED BY THE CREAMERIES.

COUNTIES.	Number reporting.	Pounds of milk received.	Pounds of cream received.	POUNDS OF BUTTER MADE AND MARKET FOR SAME.				
				Number reporting.	Pounds made.	Pounds sold to patrons.	Pounds sold in Iowa.	Pounds shipped out of the state.
THE STATE.....	601	975,908,837	69,626,449	601	53,642,487	3,924,489	3,945,978	51,772,020
Adair.....	8	18,781,828	188,839	8	855,826	25,902	19,411	810,513
Adams.....	1	8,000,000	18,000	1	120,000	1,200	1,920	116,890
Allamakee.....	6	11,428,020	2,523,858	6	1,167,578	86,977	21,115	1,107,398
Audubon.....	11	20,286,065	471,849	11	994,108	78,668	8,250	912,190
Benton.....	3	9,580,918	112,718	3	874,095	7,146	21,820	345,123
Black Hawk.....	14	24,987,484	2,736,887	14	1,287,458	207,467	243,073	898,918
Boone.....	8	5,664,876	498	8	244,264	12,006	84,110	198,148
Bremer.....	20	68,540,159	6,238	20	2,837,268	253,344	57,228	2,546,696
Buchanan.....	11	46,668,180	990,774	11	2,265,786	171,925	75,598	2,018,298
Buena Vista.....	4	8,263,764	289,080	4	427,927	19,711	16,681	891,536
Butler.....	17	88,292,174	591,560	17	1,864,287	129,760	77,064	1,658,443
Calhoun.....	6	5,561,960	248,709	6	809,666	19,572	19,239	380,885
Carroll.....	11	9,183,887	17,553	11	468,770	18,448	4,617	490,806
Cass.....	2	862,904	8,784	2	15,804	800		15,504
Cedar.....	7	5,091,240	708,182	7	456,967	19,479	89,868	847,596
Cerro Gordo.....	4	1,968,789	679,884	4	264,924	7,872	28,446	223,606
Cherokee.....	5	2,068,682	250,076	5	149,127	2,888	13,815	132,924
Chickasaw.....	16	34,405,718	5,181,066	16	2,690,175	197,544	72,887	2,555,518
Clay.....	7	11,098,614	80,836	7	523,960	39,622	23,743	490,564
Clayton.....	17	88,538,118	4,588,771	17	2,298,068	88,640	11,981	2,192,497

POUNDS OF MILK RECEIVED, ETC.—CONTINUED.

COUNTIES.	Number reporting.	Pounds of milk received.	Pounds of cream received.	POUNDS OF BUTTER MADE AND MARKET FOR SAME.				
				Number reporting.	Pounds made.	Pounds sold to patrons.	Pounds sold in Iowa.	Pounds shipped out of the state.
Clinton	10	13,613,748	474,000	10	668,491	13,640	68,261	601,590
Crawford	2	488,388	264,164	2	87,220	1,256	511	85,553
Dallas	4	9,998,047	40,900	4	462,376	18,828	106,873	27,675
Davis	1	845,87		1	58,688	804	6,540	27,944
Decatur	1	160,000	45,000	1	28,900	5,675	800	22,825
Delaware	22	63,390,256	128,484	22	2,823,569	258,432	220,577	2,344,564
Dickinson	4	4,604,57	260,372	4	265,229	90,396	24,680	210,213
Dubuque	18	29,181,880	6,150	18	1,878,021	96,445	114,615	1,168,861
Emmet	8	9,028,547	308,877	8	478,110	43,454	8,499	428,207
Fayette	20	57,539,184	351,987	20	2,625,556	263,501	153,541	2,306,514
Floyd	5		2,941,478	5	710,896	96,816	16,819	688,198
Franklin	6	10,971,377	301,432	6	499,167	90,669	12,474	453,796
Greene	8	2,079,447	25,195	8	89,806	1,269	33,243	50,294
Grundy	8	16,745,241	404,532	8	794,009	71,299	12,916	709,794
Guthrie	7	14,483,281	216,388	7	751,449	29,108	55,064	667,282
Hamilton	6	12,995,277	117,421	6	608,028	54,117	4,449	549,457
Hancock	8	6,147,438	556,870	8	352,408	15,515	3,429	363,464
Hardin	11	20,632,971	643,071	11	1,019,113	73,287	84,179	911,647
Harri-on	2	2,355,659	1,200	2	108,427	10,590	48,694	44,153
Henry	1	689,549		1	33,597	1,419	825	31,353
Howard	9	13,635,871	1,958,859	9	1,983,322	36,243	1,896	1,045,683
Humboldt	11	10,685,025	909,722	11	678,056	50,482	1,166	617,408
Iowa	2	8,016,301	845,637	2	2,570,1	4,460	2,00	199,141
Jackson	11	12,153,468	1,189,746	8	791,516	185,748	69,114	536,754
Jasper	4	4,801,448	95,624	4	234,179	11,780	8,182	214,247
Jefferson	4	1,82,2,192	285,570	4	145,075	7,783	24,200	113,020
Johnson	1		87,248	1	24,307			24,307
Jones	18	51,898,619	506,391	18	2,341,521	168,466	113,289	2,064,767
Keokuk	8	448,970	188,694	8	51,850	204		51,646
Kossuth	20	35,658,208	902,765	20	1,908,137	188,842	66,698	1,652,397
Linn	17	24,980,187	80,209	17	1,154,310	64,466	128,444	963,410
Louis	1		72,000	1	1,500		5,000	18,000
Lucas	1	22,500		1	1,112	90	1,022	
Lyon	4	771,675	507,392	4	121,322	2,467	9,605	108,450
Mahaska	2	562,639	290,000	2	99,757	3,564	28,564	57,621
Marion	1		167,176	1	42,822		18,978	28,844
Marshall	6	5,720,222	1,978,994	6	658,748	20,082	31,221	607,453
Mitchell	10	1,504,040	5,479,775	10	1,798,183	51,720	818,315	1,428,148
Monona	1		12,868	1	8,714	67	180	8,517
Monroe	1	1,381,800		1	52,292	2,868	18,464	36,990
Montgomery	1	850,000	80,00	1	46,828	3,000	18,828	30,000
Muscataine	2	800,000	469,200	2	123,900	1,100	43,400	74,400
O'Brien	4	4,992,817	281,815	4	296,667	71,720	80,777	218,110
Osceola	2	2,450,000	108,081	2	185,572	220	2,084	138,386
Page	8	2,176,700	1,017,425	8	846,607	2,900	82,000	261,707
Palo Alto	14	32,524,788	1,835,501	14	1,801,018	199,201	76,572	1,539,245
Plymouth	4	7,097,996	221,794	4	870,218	21,925	7,382	300,961
Pocahontas	7	2,118,574	937,672	7	891,311	10,711	4,005	375,995
Polk	4	2,620,429	1,970,538	4	629,198	11,232	364,819	293,642
Pottawattamie	8	1,064,225	299,996	8	114,015	4,598	28,426	80,491
Poweshiek	4	2,532,128	824,120	4	824,780	4,908	45,629	274,554
Ringgold	1	135,202		1	5,116	529		4,897
Sac	8	8,157,868	1,471,849	8	699,625	41,013	42,404	606,606
Scott	2	637,000	410,060	2	181,890	1,200	89,000	441,190

POUNDS OF MILK RECEIVED, ETC.—CONTINUED.

COUNTIES.	Number reporting.	Pounds of milk received.	Pounds of cream received.	POUNDS OF BUTTER MADE AND MARKET FOR SAME.				
				Number reporting.	Pounds made.	Pounds sold to patrons.	Pounds sold in Iowa.	Pounds shipped out of the state.
Shelby.....	7	8,744,092	889,087	7	587,016	88,941	2,742	545,838.
Sioux.....	5	1,776,728	1,526,169	5	562,580	5,568	14,178	572,684
Story.....	12	21,542,348	407,916	12	992,620	106,209	168,767	720,644
Tama.....	5	1,807,814	1,871,001	5	408,917	1,504	2,641	405,782
Taylor.....	2	1,339,730	2,166,880	2	618,685	2,200	10,000	606,485
Union.....	2	8,081,874	101,928	2	168,090	7,875	7,608	152,607
Van Buren.....	2	.....	227,420	2	56,855	500	9,000	47,855
Wapello.....	2	1,855,790	4,349	2	80,011	1,800	29,488	48,725
Warren.....	2	1,985,000	.....	2	83,050	8,750	28,050	56,250
Washington.....	5	8,267,066	1,028,912	5	383,085	2,616	64,112	324,357
Wayne.....	1	4,108,784	.....	1	172,666	3,000	.....	169,666
Webster.....	4	8,728,758	524,188	4	248,972	7,896	87,086	204,040
Winneshiek.....	9	21,920,535	481,313	9	1,011,717	117,484	20,477	873,756
Winneshiek.....	16	920,000	6,238,920	16	1,592,451	20,157	85,446	2,486,648
Woodbury.....	2	.....	1,178,020	2	841,607	4,276	4,276	382,055
Worth.....	10	12,261,629	1,089,650	10	823,797	64,968	15,516	748,822
Wright.....	6	1,301,180	1,213,881	6	856,807	23,101	15,348	817,858
THE STATE.....	601	975,906,887	60,626,444	601	59,642,487	8,924,459	8,945,978	51,772,020

Average make of butter per creamery, 97,770 pounds. On this basis the 661 creameries of the state make 64,565,970 pounds.

COMPARISON BY YEARS.

ENDING MAY 1—	1900.	1901.	1902.	1903.
Average pounds of butter per creamery.....	104,918	105,491	104,152	97,770
Total pounds of butter for all creameries.....	84,965,082	82,704,844	77,885,696	64,565,970.

Of the creamery butter made, 15.4 per cent was consumed in Iowa.
The figures for 1903 are for the year ending July 1st.

TABLE SHOWING NUMBER OF COWS FOR EACH COUNTY AND FOR THE STATE FOR THE YEARS 1895, 1900, 1901, 1902, 1903, AND VALUES FOR 1903.

Figures are from census of 1895 and the reports of county auditors to the state auditor for the years 1900, 1901, 1902 and 1903.

COUNTY.	VALUE.	NUMBER.				
	1903.	1903.	1902.	1901.	1900.	1895.
THE STATE.....	\$ 32,181,179	1,370,082	1,423,348	1,382,242	1,295,980	1,087,250
Adair.....	866,962	17,018	17,724	16,192	14,050	9,065
Adams.....	278,773	11,426	12,524	11,857	10,762	7,600
Allamakee.....	314,567	12,639	13,595	13,550	12,677	12,299
Appanoose.....	380,540	11,548	12,012	11,910	10,928	8,142
Audubon.....	268,942	13,282	13,673	12,920	11,581	8,276
Benton.....	422,616	17,959	18,668	18,653	17,407	14,508
Black Hawk.....	438,960	17,968	19,072	18,647	17,807	17,066
Boone.....	298,922	14,239	15,169	14,543	13,681	11,121
Bremer.....	454,042	17,805	17,492	17,959	17,671	18,000
Buchanan.....	336,984	16,566	17,816	17,606	17,254	15,730
Buena Vista.....	332,080	15,023	15,914	15,046	14,094	9,824
Butler.....	370,188	15,564	15,497	15,157	15,964	15,634
Calhoun.....	275,046	13,758	14,215	13,544	12,880	9,829
Carroll.....	327,915	16,538	15,825	16,172	14,407	10,429
Cass.....	345,430	14,240	14,446	13,572	12,189	9,513
Cedar.....	428,088	16,615	17,929	17,807	16,475	12,730
Cerro Gordo.....	255,960	12,718	12,252	12,600	11,795	10,004
Cherokee.....	304,548	12,466	13,877	13,990	11,743	8,602
Chickasaw.....	367,487	14,890	15,773	15,482	15,037	10,656
Clarke.....	240,251	10,168	10,701	10,298	9,397	6,382
Clay.....	236,298	12,110	12,464	12,782	11,689	8,594
Clayton.....	580,564	21,724	21,714	21,696	20,850	21,732
Clinton.....	470,376	19,641	19,706	19,563	19,107	21,272
Crawford.....	353,255	17,844	16,917	16,197	14,947	11,401
Dallas.....	324,781	15,152	15,346	14,169	13,703	10,512
Davis.....	249,080	10,020	10,260	10,252	9,877	7,282
Decatur.....	322,700	13,210	14,115	17,831	12,040	8,188
Delaware.....	444,442	21,384	20,836	21,168	20,301	20,777
Des Moines.....	223,664	8,779	8,624	8,501	7,798	7,335
Dickinson.....	167,261	6,502	7,010	6,842	6,188	4,015
Dubuque.....	438,788	18,169	18,054	19,095	17,944	18,373
Emmet.....	150,664	7,598	7,080	6,712	6,594	5,580
Fayette.....	524,208	21,768	23,018	22,575	22,252	23,734
Floyd.....	268,984	12,008	12,462	12,604	12,680	12,664
Franklin.....	282,217	13,680	13,801	13,056	12,117	11,239
Fremont.....	204,049	8,744	8,602	8,214	7,497	5,346
Greene.....	237,412	14,050	14,902	13,873	12,955	10,309
Grundy.....	344,134	14,559	15,177	15,214	14,773	13,604
Guthrie.....	380,369	16,197	17,354	16,961	14,825	8,594
Hamilton.....	371,723	15,267	16,056	15,535	14,441	12,799
Hancock.....	231,356	11,580	11,573	11,160	10,098	7,475
Hardin.....	376,047	15,519	17,113	15,525	14,669	11,869
Harrison.....	232,124	4,825	14,936	14,214	12,661	9,256
Henry.....	208,080	8,264	8,796	8,509	8,021	7,074
Howard.....	291,187	12,638	13,051	13,061	11,695	11,000

NUMBER OF COWS, ETC.—CONTINUED.

COUNTIES.	VALUE.	NUMBER.				
	1903.	1903.	1902.	1901.	1900.	1899.
Humboldt	220,821	10,665	11,081	11,206	10,868	8,546
Ide	218,698	8,949	9,479	9,808	8,185	8,850
Iowa	404,040	16,886	17,175	17,882	18,457	12,270
Jackson	408,182	16,684	16,780	16,270	15,537	15,149
Jasper	478,442	18,669	18,662	17,974	18,201	18,870
Jefferson	248,120	9,110	9,655	9,806	8,228	7,465
Johnson	452,814	7,898	17,549	17,897	17,430	12,756
Jones	490,022	17,757	18,176	19,145	18,454	18,847
Keokuk	840,158	14,279	14,922	14,208	18,840	10,126
Kossuth	439,438	21,239	22,913	21,407	19,846	14,120
Lee	289,071	11,118	10,868	10,628	10,570	8,914
Linn	497,097	21,212	22,071	20,658	20,546	24,868
Louisa	187,976	7,845	7,675	7,256	6,701	5,506
Lucas	248,848	10,188	10,227	9,887	9,238	7,217
Lyon	236,298	10,724	10,860	9,281	8,289	5,801
Madison	299,592	18,778	15,888	14,085	18,800	9,426
Mahaska	329,000	13,676	18,919	18,725	12,840	10,823
Marion	811,124	18,068	18,226	12,667	11,225	9,624
Marshall	848,848	15,891	16,496	16,567	14,167	12,881
Mills	284,962	9,265	9,508	9,089	8,588	5,522
Mitchell	279,904	11,684	12,008	11,744	11,198	10,965
Monona	284,980	11,651	12,525	11,678	11,757	6,739
Monroe	28,452	9,027	8,981	9,152	8,222	6,588
Montgomery	225,804	10,984	10,858	10,402	9,907	6,970
Muscatine	287,962	10,228	9,198	11,040	10,104	9,238
O'Brien	262,885	17,728	12,895	12,866	11,028	10,179
Osceola	155,048	7,142	7,118	6,435	5,881	8,868
Page	844,758	18,661	14,067	11,875	12,756	8,084
Palo Alto	264,990	18,778	14,764	14,899	14,805	10,269
Plymouth	365,964	17,868	16,848	16,240	14,598	10,811
Pocahontas	254,784	18,498	14,088	14,191	12,790	9,854
Polk	89,716	15,662	15,492	14,815	18,616	11,878
Pottawattamie	614,124	21,988	22,856	21,875	18,886	14,487
Poweshiek	853,690	15,978	16,220	15,827	14,796	12,190
Ringgold	296,888	12,625	18,332	12,728	12,811	8,514
Sac	368,508	15,615	16,546	15,472	14,658	11,844
Sac &	368,207	14,717	14,899	14,945	14,204	12,779
Shelby	396,840	16,674	17,960	17,117	16,196	9,528
Sioux	380,214	16,899	16,187	14,888	18,409	9,016
Story	346,788	15,062	16,017	15,112	14,894	12,216
Tama	438,461	16,461	18,008	17,974	17,028	18,658
Taylor	286,570	18,577	12,821	18,458	11,838	8,994
Union	269,832	12,024	12,785	11,580	11,844	7,510
Van Buren	248,248	9,154	9,247	9,099	8,678	7,182
Wapello	296,892	9,672	9,877	9,608	8,925	7,665
Warren	847,820	14,888	15,106	14,094	18,022	9,417
Washington	804,696	12,881	11,267	12,972	12,620	9,086
Wayne	822,276	18,418	14,064	14,459	18,178	8,548
Webster	406,080	16,186	16,185	15,488	14,928	18,432
Winnebago	187,448	11,519	11,769	10,450	9,868	7,100
Winnechick	448,656	18,618	18,884	19,083	17,809	18,410
Woodbury	808,184	15,078	16,189	16,106	18,885	10,285
Worth	242,801	11,885	11,960	11,681	11,866	9,758
Wright	261,477	12,836	18,796	18,749	12,191	10,108
THE STATE	\$ 82,181,179	1,370,062	1,423,848	1,382,242	1,295,960	1,087,259

Average value of cows, \$23.48.

Lowest reported value, Winnebago county, \$16.27.

Highest reported value, Appanoose county, \$31.08.

The very low average value is accounted for by the fact that the assessors include as "cows" all the animals not included in the classification "heifers one year old," and "heifers two years old."

Heifers two years old, 832,476; average value, \$18.86; total, \$6,108,173.

Heifers one year old, 516,071; average value, \$18.51; total, \$6,974,484.

NUMBER OF CREAMERY PATRONS.

The following table gives the number of patrons of the creameries, so far as reported and, as in the case of a number of creameries, the figures show a decided decrease from those of a year ago. The table shows that of the 661 creameries now in operation in Iowa, only 194 use a commercial starter, and of these only a few use a commercial starter every month in the year. There are a number of things which have been definitely settled in regard to creamery operation, and one of them is that the intelligent use of a commercial starter every day in the year will raise the quality of butter very decidedly. The most successful creameries, and the creameries making the highest grade of butter, the creameries that receive a cent and a half above extras, are operated by butter makers who are especially skillful in the use of starters, and the man who expects to continue in the butter making business and to better his condition and be able to make better butter than he does now, will be obliged to adopt the use of a starter. The assistant dairy commissioner points out a number of first-class butter makers who are making butter that will score about 92 or 93, and who are capable of making butter that will score three or four points higher if they would take pains to familiarize themselves with the use of a starter.

TABLE SHOWING NUMBER OF PATRONS, COWS, CREAMERIES USING ACID TEST, CREAMERIES THAT PASTEURIZE THE SKIMMED MILK AND CREAMERIES THAT USE A SKIMMED MILK WEIGHER.

COUNTIES.	No of creameries reporting.	No. of patrons reported.	No. of creameries reporting number of cows.	No. of cows reported.	No of creameries using commercial starter.	No. of months commercial starter is used.	No. of creameries using test for acidity of cream	No of creameries that pasteurize skimmed milk.	Using skimmed milk weigher.
THE STATE.....	592	65,510	477	391,077	194	.....	189	298	275
Adair.....	3	1,092	6	5,805	4	9	4	2	5
Adams.....	1	206	1	500	.....	.....	.....	.....	.....
Alamakee.....	6	1,352	6	7,710	3	9	2	1	.....
Andubon.....	11	1,104	9	6,975	9	8	.....	7	3
Benton.....	6	656	2	600	5	.....	4	7	3
Black Hawk.....	16	1,382	11	7,711	5	9	5	9	3
Boone.....	3	240	3	2,550	2	9	3	2	3
Bremer.....	20	1,608	16	15,141	5	12	4	4	13
Buchanan.....	10	1,932	6	9,104	2	10	2	3	5
Buena Vista.....	4	444	2	2,495	2	7	3	3	3
Butler.....	17	1,845	14	10,817	3	8	4	8	3
Calhoun.....	7	901	6	5,970	3	10	3	4	6
Carroll.....	11	571	10	3,900	4	8	2	5	6
Cass.....	2	145	1	438	1	12	1	2	2
Cedar.....	7	656	5	3,926	.....	.....	.....	1	1
Cerro Gordo.....	3	225	3	1,980	.....	.....	.....	1	.....
Cherokee.....	5	220	4	1,500	3	9	2	2	.....
Chickasaw.....	16	2,364	14	17,751	2	8	3	6	5
Clay.....	7	500	5	2,754	3	10	4	6	3
Clayton.....	17	2,438	13	18,775	5	8	7	3	4
Clinton.....	11	702	9	4,900	2	9	1	7	4
Crawford.....	3	851	2	1,172	2	7	3	1	1
Dallas.....	4	565	2	1,850	2	12	1	3	2
Davis.....	1	126	.....	.....	1	12	1	1	1
Delaware.....	20	1,784	18	15,456	9	10	11	14	11
Dickinson.....	4	252	3	1,280	3	8	2	2	2
Dubuque.....	16	960	17	9,705	6	6	4	4	10
Emmet.....	3	432	9	4,058	3	12	1	4	3
Fayette.....	19	2,464	13	14,232	12	7	6	12	6
Floyd.....	5	1,073	3	5,320	.....	.....	2	.....	3
Franklin.....	3	933	6	4,345	1	6	2	5	3
Greene.....	3	146	2	620	1	6	1	1	.....
Grundy.....	9	749	9	6,700	2	12	1	4	4
Guthrie.....	7	1,011	4	3,890	3	12	1	5	5
Hamilton.....	7	629	6	4,180	3	9	4	5	1
Hancock.....	9	594	6	3,400	2	8	3	4	4
Hardin.....	11	1,307	11	10,404	2	11	5	7	3
Harrison.....	3	177	2	840	2	9	1	2	2
Henry.....	1	59	1	360	1	12	1	1	1
Howard.....	9	1,276	6	7,843	.....	.....	2	2	3
Humboldt.....	11	673	10	4,890	3	9	3	5	10
Ida.....	2	213	2	1,900	1	12	1	1	.....
Iowa.....	3	884	7	4,580	3	10	4	2	7
Jackson.....	10	762	9	6,482	2	5	4	6	7
Jasper.....	3	206	1	900	1	12	.....	.....	.....

NUMBER OF PATRONS, COWS, ETC. - CONTINUED.

COUNTY.	No. of creameries reporting.	No. of patrons reported.	No. of creameries reporting number of cows.	No. of cows reported.	No. of creameries using commercial starter.	No. of months commercial starter is used.	No. of creameries using test for acidity of cream.	No. of creameries that pasteurize skimmed milk.	Using skimmed milk weighed.
Jefferson.....	4	281	8	1,455	2	10	2	1	
Johnson.....	2	254	1	836					
Jones.....	16	1,667	10	8,982	4	9	1	5	7
Keokuk.....	3	189	2	806			1	1	
Kossuth.....	21	1,494	16	10,729	4	12	3	3	16
Linn.....	16	1,068	18	7,090	6	9	6	8	12
Louisa.....	1	80	1	500	1	12			
Lucas.....	1	80	1	250					
Lyon.....	4	296	4	2,320	1	8	1	2	2
Mahaska.....	1	67	2	1,100					
Marion.....	1	151	1	1,000					
Marshall.....	6	1,025	4	4,714	2	7	1	1	2
Mitchell.....	9	1,754	7	9,684	2	8	3	1	1
Monona.....	1	65	1	400	1	12	1		
Monroe.....	1	82	1	575					1
Montgomery.....	1	180	1	700	1	12	1	1	
Muscatine.....	2	535	1	850					
O'Brien.....	6	477	8	2,700	1	6	1	2	5
Osceola.....	2	233	1	800				2	
Page.....	3	546	1	600	1	6	1		
Palo Alto.....	15	1,639	13	14,542	7	10	4	7	12
Plymouth.....	5	849	5	3,090	1	6	1		4
Pocahontas.....	7	898	6	2,225	1	10	3	2	3
Polk.....	8	458	1	900				3	1
Pottawattamie.....	4	656	2	775	1			2	1
Poweshiek.....	4	604	3	2,344	1	12		3	2
Ringgold.....	1	40	1	520			1		
Sac.....	8	681	6	4,990	1	6	3	7	1
Scott.....	2	298	2	2,072					
Shelby.....	7	917	5	3,800	3	10	3	4	1
Sioux.....	4	763	5	5,895	3	10	3	3	3
Story.....	12	1,271	10	7,350	5	8	6	8	5
Tama.....	3	822	2	1,250			1	2	
Taylor.....	2	680	1	640			1		1
Union.....	2	209	1	400	2	12	2	2	
Van Buren.....	2	325	2	1,800					
Wapello.....	1	80	1	600	1	3	1	2	1
Warren.....	2	150			1	6		3	1
Washington.....	4	772	5	3,738	2	7	2	3	
Wayne.....	1	651					1		
Webster.....	2	815	2	1,150			2	3	2
Winnebago.....	9	1,098	8	7,065	2	10	2	7	6
Winneshiek.....	15	2,329	12	16,023	2	11			1
Woodbury.....	1	400	1	3,200	1	12			
Worth.....	10	938	10	6,910	4	9	3	7	3
Wright.....	7	568	4	1,496			1	2	1
THE STATE.....	592	65,510	477	391,077	194		189	296	275

The average number of patrons per creamery is 110.

Total number of creamery patrons for the 661 creameries of the state is 72,710.

The average number of cows per creamery is 892.

Total number of cows for the 661 creameries of the state is 593,732.

COMPARISONS.

	1899	1900.	1901.	1902.	1903.
Number of patrons of creameries.....	90,864	91,417	90,876	81,532	72,710
Average number of patrons per creamery.....	116	118	114	109	110
Total number of cows.....	625,512	681,829	627,984	579,700	509,732
Average number of cows per creamery.....	804	781	801	776	803
Average number of cows per patron.....	7	7	7	7	8

PASTEURIZATION OF SKIMMED MILK.

A very large proportion of the creameries of the state are operated either in whole or in part on the creamery separator plan and very largely heat the skimmed milk before it is returned to the patrons. There has been a very considerable amount of discussion in regard to the methods of prevention of foam, which is the one objection to the pasteurization of skimmed milk at the creameries. The experience of numerous butter makers, who have tried numerous plans, is convincing that there is no successful method of preventing, absolutely, the foaming of the skimmed milk when it is heated by the introduction of steam into the milk. The foam, however, can be taken care of at slight expense so that it will not be at all annoying.

For some unknown reason practically every creamery has been built with the skimmed milk tank inside, a fact for which there exists no necessity. A skimmed milk tank built outside the creamery at a reasonable distance from it and situated over the drain, is the ideal skimmed milk tank, and in any case, in order that the foam may be controlled, the skimmed milk tank must be a closed tank. There should be a man-hole in the cover of the tank so that it can be cleaned, and besides the opening of the inlet and outlet for the passage of the skimmed milk, there should be another opening in the cover of the tank from which a tin or sheet iron pipe twelve or fourteen inches in diameter leads down and is finally connected with the drain. Such a device is cheap and easily made by any tinner and will effectually dispose of any amount of foam that may arise.

CREAMERY AND SKIM STATION VALUES.

One of the most extraordinary things in the history of the creamery industry is the fact that so many creameries have been built in places where there was no demand for a creamery, and in too many cases too little need of one, and that the prices paid have been in so many cases from 25 to 50 per cent. more than the real value of the finished plants. The following table will show the average values of the creameries of the state to be \$3,830.00, which is a much higher figure than ever before reported. This is accounted for by reason of the fact that so many of the smaller and cheaper creameries have closed this year and so are not included in the figures that go to make up the average value of \$3,830.00. The creameries of the state range from \$1,500.00 to \$20,000.00 each in value.

The dairy commissioner's report for 1900 contained some figures relating to the first cost of creameries built in that year. Creameries having but one separator ranged in cost from \$2,200.00 to \$4,250.00 and the average cost was \$3,150.00. These figures may be taken as the average first cost of the ordinary creamery. Yet it seems easy for the creamery promoter to get into a community and sell a second-class creamery outfit for about \$4,500.00, at least half of which is clear profit to himself for a few months work. That this has been done too often is one of the reasons why so many of our creameries are closing now. They were built where there was not sufficient demand for them, they cost more than they were worth, and the necessity of replacing some of the machinery almost as soon as the plant was started and the costliness of the whole experiment was a very discouraging fact that in many cases could not be overcome.

A number of creameries have lately been built in Iowa in which a large tank of water is supposed to furnish the "refrigeration." This is an abominable contrivance which results in a very wet, mouldy, ill-smelling butter room, that always has a temperature almost as high as that outside and which serves absolutely no good purpose. If creamery associations would do

their own organizing, buy their machinery and supplies of the well-established and reputable houses, they would be well advised in regard to appliances and apparatus and would save one-fourth to one-half the original cost of their plants, and a good deal of annoyance and disaster that arises when too high a price is paid for inferior machinery.

WAGES OF BUTTER MAKERS.

The following table also shows the maximum and minimum and average wages paid, so far as reported in the several counties and the average wages for the state. A good many smaller creameries in which low wages were paid have been closed and so the average wage is considerably higher than ever before. But it is also true that employing creameries are offering a higher scale of wages than ever before. Five years ago few butter makers received as much as \$75.00 per month and many were working for \$40.00 or less, while now \$75.00 per month is common among butter makers and a good many get \$100.00 per month and a few receive more. The larger creameries have found that they cannot afford to employ a cheap and incompetent man, and the smaller ones are discovering that they cannot compete unless they also have a man who is competent to make good butter. Butter makers used to pride themselves on getting a half cent premium, but the man who draws \$75.00 to \$100.00 per month for making butter nowadays must be able to command a good deal larger premium on his butter than a half a cent a pound. A cent and a half premium seems to be about the standard nowadays and many of our butter makers are getting it. They are the modern fellows who have kept up with the times and have improved and so are making better butter now than they did last year and the year before that. The dairy commissioner had numerous requests to furnish high grade butter makers to creameries during last summer, and has been unable in most cases to mention any high grade man who was not already getting a good salary. The upward tendency of butter makers wages is one of the hopeful signs in the dairy business.

TABLE SHOWING THE AVERAGE VALUE OF CREAMERIES, OF SKIM STATIONS, THE MAXIMUM, MINIMUM, AND AVERAGE WAGES OF BUTTER MAKERS PER MONTH.

COUNTIES.	Number of creameries reporting.	Average value of creameries reporting.	Number of skim stations reporting.	Average value of skim stations reporting.	Number of butter makers reported.	Minimum wages paid.	Maximum wages paid.	Average wages paid.
THE STATE	550	\$3,890	67	\$1,580	568	...	...	\$59.38
Adair.....	8	4,887	3	1,900	7	\$55.00	\$65.00	61.90
Adams.....	1	7,000	8	2,500	1	...	...	77.50
Allamakee.....	6	3,250	...	...	5	40.00	75.00	52.00
Andubon.....	9	3,444	...	...	10	50.00	125.00	75.90
Benton.....	7	4,857	1	1,200	6	50.00	100.00	74.16
Black Hawk.....	16	4,218	1	1,500	18	37.50	100.00	60.30
Boone.....	3	5,866	...	...	2	55.00	85.00	70.00
Bremer.....	19	3,521	...	...	20	37.00	85.00	64.57
Buchanan.....	9	4,088	5	1,520	11	50.00	112.50	70.81
Buena Vista.....	4	3,875	2	1,500	5	50.00	100.00	64.00
Butler.....	18	2,769	4	1,550	14	80.85	85.00	68.20
Calhoun.....	8	3,800	2	1,100	4	50.00	60.00	52.50
Carroll.....	9	3,238	...	...	7	60.00	65.00	57.14
Cass.....	2	4,100	...	...	2	65.00	65.00	65.00
Cedar.....	6	2,116	2	1,300	3	45.00	60.00	51.60
Cerro Gordo.....	3	3,766	...	...	6	45.00	60.00	50.53
Cherokee.....	3	2,580	...	...	2	40.00	50.00	45.00
Chickasaw.....	14	3,521	...	...	16	50.00	110.00	66.70
Clay.....	7	3,428	...	...	5	40.00	65.00	55.00
Clayton.....	13	4,730	...	...	16	40.00	100.00	60.72
Clinton.....	8	3,450	1	500	5	50.00	75.00	55.62
Crawford.....	3	3,696	...	...	2	60.00	93.33	71.66
Dallas.....	4	3,250	2	1,750	4	50.00	65.00	55.00
Davis.....	1	2,000	1	1,000	1	...	...	50.00
Decatur.....	1	2,800	...	...	1	...	...	50.00
Delaware.....	21	3,152	1	1,500	21	40.00	105.00	61.20
Dickinson.....	4	3,500	...	...	4	50.00	80.00	62.50
Dubuque.....	19	2,974	...	...	18	36.00	80.00	50.55
Emmet.....	9	3,400	...	...	9	50.00	75.00	60.65
Fayette.....	20	3,575	1	2,000	19	50.00	100.00	63.46
Floyd.....	5	2,900	...	...	4	50.00	60.00	55.87
Franklin.....	9	3,822	1	2,000	8	50.00	96.00	72.50
Greene.....	3	3,500	...	...	1	...	...	60.00
Grundy.....	9	3,422	...	...	8	45.00	70.00	58.75
Guthrie.....	6	4,550	1	1,500	7	45.00	70.00	58.14
Hamilton.....	6	3,800	1	2,000	4	60.00	90.00	71.25
Hancock.....	9	3,022	2	1,450	8	45.00	65.00	75.66
Hardin.....	12	3,900	3	2,266	12	40.00	80.00	62.00
Harrison.....	3	3,688	...	...	2	60.00	60.00	60.00
Henry.....	1	2,500	...	...	1	...	...	65.00
Iowa.....	8	3,487	...	...	6	50.0	67.00	57.00
Humboldt.....	12	2,766	...	...	11	45.00	81.00	57.18
Ida.....	2	2,750	...	...	2	65.00	65.00	65.00
Iowa.....	3	3,500	1	1,400	8	40.00	75.00	60.62
Jackson.....	8	3,087	2	1,875	10	50.00	62.00	54.20
Jasper.....	5	3,400	...	...	4	50.00	65.00	58.75
Jefferson.....	4	3,250	...	...	4	40.00	60.00	58.75
Johnson.....	2	2,000	...	...	1	...	...	60.00
Jones.....	15	4,700	2	2,000	16	45.00	100.00	69.00
Keokuk.....	2	2,750	...	...	1	...	...	60.00

VALUE OF CREAMERIES, ETC.—CONTINUED.

COUNTIES.	Number of creameries reporting.	Average value of creameries reporting.	Number of skim stations reporting.	Average value of skim stations reporting.	Number of butter makers reported.	Minimum wages paid.	Maximum wages paid.	Average wages paid.
Kossuth.....	21	8,405	...	...	21	42.00	75.00	58.27
Linn.....	18	8,722	2	1,750	18	40.00	70.00	51.00
Louisa.....	1	1,000	...	...	1	...	...	50.00
Lucas.....	1	2,500	1	2,000	...	...	...	...
Lyon.....	5	8,280	...	...	5	20.00	60.00	46.00
Mahaska.....	2	8,500	...	...	2	40.00	40.00	40.00
Marion.....	1	8,000	...	...	1	...	...	37.50
Marshall.....	6	8,250	...	...	6	52.00	75.00	60.40
Mitchell.....	9	2,811	...	...	9	25.00	65.00	55.22
Monona.....	1	8,000	...	...	...	...	...	...
Monroe.....	1	8,000	...	...	...	...	...	60.00
Montgomery.....	1	8,000	...	...	...	...	...	55.00
Muscatine.....	2	2,500	...	...	1	40.00	90.00	68.75
O'Brien.....	3	8,930	1	800	4	40.00	60.00	57.50
Osceola.....	2	5,000	...	...	2	55.00	60.00	57.50
Page.....	2	6,000	...	...	2	50.00	60.00	55.00
Palo Alto.....	15	8,140	1	1,500	15	45.00	85.00	63.12
Plymouth.....	5	8,000	...	...	5	45.00	85.00	57.00
Pocahontas.....	7	1,800	...	...	5	45.00	65.00	51.60
Polk.....	4	6,125	2	1,850	4	50.00	65.00	56.00
Pottawattamie.....	6	4,450	2	1,100	5	45.00	75.00	57.00
Poweshiek.....	8	6,000	2	1,200	5	50.00	65.00	57.50
Ringgold.....	1	8,000	...	...	1	...	...	45.00
Sac.....	9	4,644	1	1,800	7	40.00	65.00	50.71
Scott.....	2	8,250	...	...	1	...	...	60.00
Shelby.....	9	8,883	1	1,000	7	50.00	80.00	58.42
Sioux.....	6	8,500	...	...	5	50.00	65.00	57.00
Story.....	11	4,818	...	...	12	50.00	80.00	61.66
Tama.....	4	8,125	...	...	4	50.00	65.00	55.00
Taylor.....	2	8,250	...	...	2	50.00	50.00	50.00
Union.....	4	4,125	8	766	4	45.00	60.00	52.50
Van Buren.....	2	2,000	...	...	2	40.00	45.00	42.50
Wapello.....	2	1,950	1	1,000	1	...	...	50.00
Warren.....	2	2,750	1	1,200	2	40.00	50.00	45.00
Washington.....	5	8,280	...	...	4	80.00	100.00	52.50
Wayne.....	1	10,000	1	2,500	1	...	...	50.00
Webster.....	4	1,887	1	2,500	4	55.00	70.00	61.87
Winnebago.....	9	8,555	8	1,650	9	20.00	100.00	64.44
Winnebush.....	14	2,818	1	600	14	30.00	85.00	50.00
Woodbury.....	1	2,000	...	...	1	...	...	65.00
Worth.....	10	2,770	1	2,500	9	50.00	75.00	62.50
Wright.....	7	2,957	...	...	5	45.00	60.00	49.00
THE STATE.....	550	\$3,880	67	\$1,580	568	...	...	\$59.88

AVERAGE WAGES OF BUTTER MAKERS.

1897.....	\$50.04	1900.....	\$58.80
1898.....	53.68	1901.....	55.72
1899.....	52.77	1902.....	59.88

The average value of skim stations, according to the foregoing table, is \$1,580. The average value of creameries is \$3,880.

On this valuation the 661 creameries and 181 skim stations of the state have an aggregate value of \$2,787,611, and the 661 butter makers are paid wages amounting to \$491,000 annually.

HAND SEPARATORS IN IOWA.

The first statistics of hand separators secured for use in the dairy commissioner's reports were obtained in the year 1898. It is evident that any reports made will fall below the actual facts. A number of creameries neglect to report in regard to the number of separators in use and there is no way of determining how many they have. This is true for each of the years, so that for purposes of comparison the figures given below are sufficiently correct and, indeed, it is believed that they do not in any instance fall much below the actual facts.

NUMBER OF HAND SEPARATORS REPORTED.

1898	1899	1900	1901	1902	1903
904	1,762	3,332	5,231	8,323	16,841

The introduction of the hand separator into Iowa creamery methods has caused something like a revolution in the last six years. The total number of creamery patrons is now estimated to be about 75,000, of which more than 16,000 are using hand separators. This is more than 20 per cent. of the total creamery patronage of the state. It is also estimated that 14,500,000 pounds of butter are made from hand separator cream. There are in the state 38 creameries that are practically receiving nothing but hand separator cream. Two-thirds of the creameries of the state receive cream from one or more hand separators. There are forty-five plants which report that they receive cream shipped to them by rail and of these forty-five plants eleven are receiving nearly all their cream by rail and are properly called centralizing plants. In this connection, attention is called to the fact that sixty-one skim stations have been closed in the state during the last year, and the tendency seems to be to substitute for the skimming station the hand separator and the shipping of cream. The skimming station has been found to be a very expensive addition to the local creamery and for this reason it seems certain that the skimming stations will soon disappear.

In the following table, which shows the number of hand separators and number of pounds of butter made, the figures for the number of separators are taken exactly as given in the reports from the creameries and, as suggested before, are slightly incomplete. The figures giving the number of pounds of hand separator butter made are estimated in the following manner: It is assumed that the number of pounds of hand separator butter made by a creamery is in the same proportion to the whole amount of butter made as the number of hand separator patrons is to the whole number of patrons.

COUNTIES.	No. of creameries reporting hand separators.	Hand separators reported.	No. of exclusive hand separator creameries.	No. receiving cream by rail.	No. of pounds of hand separator butter made.
THE STATE.....	410	16,841	88	45	14,664,800
Adair.....	6	177	.....	.....	180,000
Adams.....	1	32	.....	.....	20,000
Allamakee.....	5	455	.....	.....	400,000
Audubon.....	7	179	1	.....	197,500
Benton.....	3	16	.....	.....	10,000
Black Hawk.....	8	248	1	2	107,000
Boone.....	1	1	.....	.....	.....
Bremer.....	2	6	.....	.....	8,000
Buchanan.....	8	311	.....	1	230,000
Buena Vista.....	3	200	1	.....	228,000
Butler.....	10	98	1	.....	75,000
Calhoun.....	6	216	.....	1	55,800
Carroll.....	4	140	1	1	100,000
Cass.....	3	159	.....	1	100,000
Cedar.....	5	48	.....	.....	85,000
Cerro Gordo.....	7	273	1	1	225,000
Cherokee.....	3	59	1	1	40,000
Chickasaw.....	14	782	2	.....	844,000
Clay.....	5	86	.....	.....	25,000
Clayton.....	17	1,898	4	4	1,015,800
Clinton.....	6	99	.....	2	75,000
Crawford.....	3	830	.....	2	288,000
Dallas.....	3	37	.....	1	28,000
Decatur.....	1	100	.....	1	25,000
Delaware.....	6	44	.....	1	25,000
Dickinson.....	4	66	.....	.....	68,800
Dubuque.....	4	325	2	2	300,000
Emmet.....	6	94	.....	1	89,700
Fayette.....	6	108	.....	1	108,800
Floyd.....	5	432	1	.....	309,600
Franklin.....	6	141	.....	.....	97,100
Greene.....	3	10	.....	.....	8,000
Grundy.....	9	111	.....	.....	120,900
Guthrie.....	6	109	.....	.....	70,900
Hamilton.....	5	140	.....	.....	47,700
Hancock.....	9	229	1	.....	148,400
Hardin.....	3	257	.....	1	249,200
Harrison.....	1	14	.....	.....	12,000
Howard.....	5	323	.....	.....	197,200
Humboldt.....	10	139	.....	.....	185,400

COUNTIES.	No. of creameries reporting hand separators.	Hand separators reported.	No. of exclusive hand separator creameries.	No. receiving cream by rail.	No. of pounds of hand separator butter made.
Ida.....	2	155			147,800
Iowa.....	6	119			78,200
Jackson.....	7	71			76,500
Jasper.....	8	11			14,000
Jefferson.....	1	41			40,000
Johnson.....	2	88			20,000
Jones.....	18	147			210,000
Keokuk.....	2	48			25,800
Kossuth.....	14	211			280,100
Linn.....	5	444	2	2	200,000
Louisa.....	1	6			2,000
Lyon.....	5	167	1		80,700
Mahaska.....	1	18			15,000
Marion.....	1	1			500
Marshall.....	4	138			80,700
Mitchell.....	9	446			630,400
Monona.....	1	14			5,000
Montgomery.....	1	45			20,000
Muscatine.....	2	19			10,000
O'Brien.....	3	250		1	84,000
Osceola.....	2	118		1	26,500
Page.....	2	400	1	1	289,000
Palo Alto.....	7	34			80,000
Plymouth.....	2	80	1		78,000
Pocahontas.....	6	828	8		218,400
Polk.....	2	375	1	2	276,000
Portawattamie.....	4	497	1	1	300,000
Poweshiek.....	4	148		1	100,400
Sac.....	9	171	1	1	121,200
Scott.....	2	81		1	35,000
Shelby.....	6	533	1	1	245,000
Sioux.....	6	764	8	2	490,700
Story.....	4	85			20,000
Tama.....	1	157	1	1	70,000
Taylor.....	2	619	1	1	540,000
Union.....	2	216		1	97,500
Van Buren.....	1	4			8,500
Wapello.....	1	1			500
Washington.....	1	14			6,000
Webster.....	4	168		2	90,000
Winnebago.....	4	17			87,000
Winneshek.....	15	450			315,000
Woodbury.....	2	650	2	2	2,500,000
Worth.....	8	216			202,300
Wright.....	6	319	2	1	249,000
THE STATE.....	410	16,841	88	45	14,504,800

HAND SEPARATOR CREAMERIES.

The following thirty-eight creameries make their butter almost altogether from hand separator cream. Most of them receive nothing but hand separator cream.

COUNTY.	NAME OF CREAMERY.	LOCATION.
Andubon.....	Gray Creamery Co.....	Gray.
Black Hawk.....	Palmer-Hubbard Co.....	Waterloo.
Buena Vista.....	Grant Creamery Co.....	Storm Lake.
Butler.....	Walker Creamery.....	Shell Rock.
Carroll.....	Ocon Rapids Creamery.....	Ocon Rapids.
Cerro Gordo.....	J. D. Bickel Produce Co.....	Mason City.
Cherokee.....	Washta Creamery.....	Washta.
Chickasaw.....	Republic Creamery.....	Republic.
Clayton.....	Nashua Creamery.....	Nashua.
	Elkader Creamery Co.....	Elkader.
	Monona Creamery Co.....	Monona.
	Blue Grass Creamery.....	Watson.
Dubuque.....	J. D. Bickel Produce Co.....	McGregor.
	S. P. Wadley & Son.....	Dubuque.
	Dubuque Butter & Milk Co.....	Dubuque.
Floyd.....	Niles Creamery.....	Niles.
Hancock.....	Kanawha Creamery Co.....	Kanawha.
Linn.....	Cedar Valley Creamery Co.....	Oedar Rapids.
	The Cedar Rapids Butter & Cream Co.....	Cedar Rapids.
Lyon.....	Home Lawn Creamery.....	Rock Rapids.
Page.....	Olarinda Poultry, Butter & Egg Co.....	Olarinda.
Plymouth.....	Payne Creamery.....	Kingsley.
Pocahontas.....	Plover Creamery Co.....	Plover.
	Pocahontas Creamery.....	Pocahontas.
	Ware Creamery.....	Ware.
Polk.....	Des Moines Creamery Co.....	Des Moines.
Pottawattamie.....	Avoca Creamery.....	Avoca.
Sac.....	Geyer Creamery.....	Storm Lake.
Shelby.....	Portsmouth Creamery.....	Portsmouth.
Sioux.....	Alton Creamery.....	Alton.
	Hull Creamery.....	Hull.
	Rock Valley Creamery.....	Rock Valley.
Tama.....	Tama Co-operative Creamery Co.....	Tama.
Taylor.....	Bedford Creamery.....	Bedford.
Woodbury.....	Hanford-Hazelwood Cream Co.....	Sioux City.
	Hopkins & Hubbard.....	Correctionville.
Wright.....	Norway Co-operative Creamery Co.....	Belmond.
	Clarion Creamery Association.....	Clarion.

THE CREAMERIES OF THE STATE.

The following table shows certain statistical information in regard to the number of creameries and of skim stations and the plan on which they are organized and operated, and gives information in regard to the number of new creameries and of creameries closed or removed from the creamery list for other reasons. During the year for which these statistics are taken, 161 plants in the state of Iowa have ceased to operate. Of these plants, exactly 100 were creameries and sixty-one were skim stations. That is to say, more than one-third of the skim stations that were in operation a year ago have closed, and of these sixty-one that have closed, twenty-one were plants of the Elgin Creamery Co. that failed about a year ago.

OWNERSHIP—OPERATION—MILK BY TEST—NEW CHANGES.

COUNTIES.	OWNERSHIP— INDIVIDUAL, CO-OPERATIVE OR STOCK COMPANY.					HOW OPERATED.			REC'D 'G MILK BY TEST OR BY CWT.		NEW CREAMER- IES AND SKIM STATIONS AND PLANTS CLOSED.			
	No. of creameries.	No. of skim stations.	Individual.	Co-operative.	Stock company.	Separator.	Gathered cream.	Combined plant.	By test.	By cwt.	New creameries.	New skim stations.	Total.	Plants closed.
THE STATE.....	661	181	306	350	186	538	119	135	748	44	25	16	41	161
Adair.....	8	5	8	3	2	11	...	2	13	...	...	...	...	...
Adams.....	1	2	...	...	...	3	...	...	3	...	...	...	...	3
Allamakee.....	7	...	1	5	1	12	4	1	7	...	...	...	...	...
Appanoose.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Audubon.....	11	...	...	8	8	9	1	1	11	...	1	...	1	1
Benton.....	8	2	7	2	1	8	...	2	10	...	1	1	2	5
Black Hawk.....	17	...	2	12	8	13	...	4	17	...	...	...	...	3
Boone.....	3	1	2	2	...	4	...	...	4	...	...	...	...	3
Bremer.....	21	...	1	18	2	20	...	1	12	9	...	...	...	1
Buchanan.....	11	6	2	5	10	14	...	3	17	...	...	...	...	1
Buena Vista.....	5	2	1	5	1	2	1	4	7	...	...	...	...	3
Butler.....	17	3	5	8	7	16	1	3	20	...	1	...	1	2
Calhoun.....	7	1	2	4	2	3	...	5	8	...	...	...	...	2
Carroll.....	12	...	6	4	2	10	...	2	10	2	...	...	...	1
Cass.....	4	3	4	2	1	7	...	...	7	...	3	...	3	6
Cedar.....	7	2	8	...	1	6	3	...	7	2	...	...	...	...
Cerro Gordo.....	6	1	5	1	1	2	4	1	6	1	1	1	2	1
Cherokee.....	4	...	4	...	...	2	1	4	...	...	...	...	...	3
Chickasaw.....	16	2	5	12	1	12	3	3	16	2	...	...	...	1
Clarke.....	...	...	...	...	...	...	...	...	...	...	...	...	...	4
Clay.....	8	...	4	2	2	8	...	...	8	...	1	...	1	6
Clayton.....	17	1	3	9	6	7	5	6	17	1	...	...	...	2
Clinton.....	10	5	11	3	1	9	1	5	15	...	...	...	...	2
Crawford.....	3	...	1	1	1	1	1	1	3	...	...	...	...	2
Dallas.....	5	3	3	1	4	8	...	...	8	...	...	...	...	2
Davis.....	1	3	...	...	4	4	...	...	4	...	...	...	...	1
Decatur.....	1	4	5	...	...	4	...	...	5	...	...	...	2	1
Delaware.....	22	4	6	16	4	25	...	1	24	2	1	...	1	...
Des Moines.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dickinson.....	4	...	4	...	...	2	...	2	4	...	...	...	...	1
Dubuque.....	22	1	7	12	4	21	2	...	18	5	3	1	4	1
Emmet.....	8	...	1	6	1	8	...	...	8	...	...	...	...	3
Fayette.....	19	...	1	18	5	17	1	1	17	2	...	...	...	1
Floyd.....	...	...	3	2	1	...	6	...	6	...	...	...	...	1
Franklin.....	8	2	5	4	1	4	3	3	10	...	...	...	...	2
Fremont.....	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Greene.....	3	1	3	1	...	3	1	...	4	...	...	...	...	2
Grundy.....	9	1	2	7	1	6	2	2	10	...	...	...	...	4
Guthrie.....	8	7	9	5	1	14	...	1	15	...	...	...	...	2
Hamilton.....	8	5	4	4	...	11	...	2	13	...	1	3	4	2
Hancock.....	9	3	2	8	2	7	3	2	12	...	1	...	1	1
Hardin.....	13	3	5	10	1	14	1	1	16	...	...	1	1	2
Harrison.....	2	...	2	...	...	1	...	1	2	...	...	...	...	5
Henry.....	1	...	1	...	...	1	...	...	1	...	...	...	...	12
Howard.....	9	...	2	4	8	4	4	1	5	4	...	...	...	1
Humboldt.....	11	...	9	1	1	9	...	2	11	...	...	...	...	1
Ia.....	2	...	2	...	...	1	...	1	2	...	...	...	...	1
Iowa.....	9	1	1	8	1	9	1	...	10	...	...	...	...	2
Jackson.....	12	4	12	4	...	10	...	6	16	...	1	...	1	5
Jasper.....	5	1	2	2	2	4	2	...	5	1	1	...	1	3

OWNERSHIP—OPERATION—MILK BY TEST—NEW CHANGES—CONTINUED.

COUNTIES.	OWNERSHIP— INDIVIDUAL, CO-OPERATIVE OR STOCK COMPANY					HOW OPERATED			REC'D V'G MILK BY TEST OR BY CWT.		NEW CREAMER- IES AND SKIM STATIONS AND PLANTS CLOSED.			
	No. of creameries.	No. of skim stations.	Individual.	Co-operative.	Stock company.	Separator.	Gathered cream.	Combined plant.	By test.	By cwt.	New creameries.	New skim stations.	Total.	Plants closed.
Jefferson	8	1			8	1	4		4			1	1	2
Johnson	28		2				1	1	2					1
Jones	15	10	17	6	2	13	12	25	8					5
Keokuk	9		2	1		2	1	2						4
Kossuth	21	1	1	20	1	19		8	21	1				
Lee														
Linn	19	8	17	4	1	17	2	5	15	7	1		1	4
Louisa	1		1				1		1					1
Lucas	1	1	1		1	2			2					
Lyon	5		8	2			1	4	4	1				1
Madison														
Mahaska	2			1	1	1	1		2					
Marion	1	2	1		2	2	1		2	1		1	1	
Marshall	6			4	2	8	8		6					2
Mills		8			8	8			8					1
Mitchell	10		1	9		1	8	1	10					1
Monona	1		1						1		1		1	
Monroe	1		1			1			1					
Montgomery	1				1				1					3
Muscatine	2		2				1	1	2					1
O'Brien	5		2	1	2	3		2	4	1				
Osceola	2	1	3					3						2
Page	3		1	1	1	3			3					1
Palo Alto	14	1	12	3	14		1	15	15					5
Plymouth	5	1	1	4	1	4	2		6					4
Pocahontas	7	1	6		2	5	2	1	8					4
Polk	4	1	1	4	4	1		5	5		1		1	
Pottawattamie	6	2	5	1	2	5	1	2	7	1	1		1	
Poweshiek	5	2	5	2		1			7			1	1	
Ringgold	1	1	1	1		1	1		2					
Sac	10	1	8	2	1	5	2	4	11		1		1	13
Scott	2		2			1	1		2					1
Shelby	9	1	3	6		5	1	4	10					2
Sioux	6		5	1		1	2	3	6					1
Story	13	1	3	10	1	12		2	14					
Tama	5		4	1		2	2	1	5					4
Taylor	2		1		1	1	1		2					2
Union	4	5	3		6		8	1	9					5
Van Buren	2	1	1		2	1			2	1		1	1	3
Wapello	2	1	1		2	3			3		1	1	2	
Warren	2	1	2	1		3			3					2
Washington	5		4		1	2	2	1	5					
Wayne	1	3	4			4			4					
Webster	4	1	5			1		4	5					2
Winnebago	12	4	1	14	1	14		2	16		1	1	2	1
Winnechick	16	1	8	4	5	2	12	3	17		1	1	2	
Woodbury	2	1		1		2		2						1
Worth	11	1	3	9		8	8	1	12					
Wright	7		2	5		3	1	5	7		1		1	2
THE STATE	641	181	306	350	136	533	119	135	748	44	25	16	41	161

* 2 Changed to cheese factories. † Error in old list. ‡ 1 changed to cheese factory.

COMPARISONS.

	1897.	1898.	1899.	1900.	1901.	1902.	1903.
Total number of creameries and skim stations. . .	891	954	997	994	980	919	782
OWNERSHIP.							
Individual	504	516	501	524	497	377	288
Co-operative	849	849	849	864	860	876	850
Stock company	87	66	116	105	102	165	135
State property	1	1	1	1	1	1	1
PLAN OF OPERATION.							
Separator			842	858	772	748	538
Gathered cream			71	85	92	105	119
Combined plant			50	56	96	75	155
BASIS OF RECEIVING MILK OR CREAM.							
By the test			849	896	890	992	746
By weight or measure			110	98	70	57	44
CREAMERY CHANGES.							
Number of new creameries	} 138	90	56	87	35	34	25
Number of new skim stations		48	36	34	18	22	19
Number of new plants closed		55	53	79	87	97	160

Of the 160 plants closed, as noted in above table, sixty-one were skim stations. Three plants previously reported as making butter are now making only cheese. Also five duplications on the old list were discovered. This makes a total to subtract from last year's list amounting to 163, which with the forty-one new plants, accounts for the net loss of 127 numbers from the creamery list.

CO-OPERATIVE CREAMERIES IN IOWA.

The State of Iowa has been the pioneer in every particular in the creamery business and for this reason the state has been a sort of experiment station for different methods of creamery operation and the creamery companies of this state have learned some very expensive lessons in regard to creamery operation. The result of this has been that the dairy commissioner's report every year for the last ten years has shown a considerable number of creameries and skim stations that have closed. A study of the localities where creameries have closed for any reason whatever very definitely shows that the creameries have been most nearly permanent in those counties where the co-operative creamery has been most in evidence, and the fact will also appear that it is the individual creamery more than the co-operative creamery that has succumbed to the disasters of the last three years.

It is true that the co-operative creameries have been the especial victims of creamery promoters and in a very large number of cases have paid originally for their plants much more than they were actually worth. It is also true that the management of the co-operatives has in too many cases been intrusted to persons who were incompetent to manage a business of the kind and character and volume of the ordinary creamery, and yet, notwithstanding these disadvantages, they have been largely successful and where the management has been at all competent they have easily competed with any other creameries operated on any other plan. These facts are too well established to require specific proof here and are mentioned simply to give force to the suggestion that the farmers of Iowa will do well now to stand by their own local creameries until such time as they may be thoroughly satisfied that a larger income will be theirs by patronizing some other system. The dairy business as a whole has been the victim of a desire for experimentation, and hence it has not been the certain thing that it ought to be, and might be, if the patrons of the industry would settle upon some one

method and stick to it long enough to show whether or not it would be successful, and so a very large number of creameries have started out with ample patronage and the best of prospects and have later gone into bankruptcy because a portion of the patronage desired to experiment with some other line of agriculture, or some other creamery, or some other method of marketing their produce than that of the local creamery.

Formerly the farmer had but one choice; he could either patronize the local creamery or churn his butter at home. Later, in a good many sections of the state, creameries were established close enough together so that the farmer might send his milk to either one of two or three creameries. Still later the introduction of the hand separator and of the centralizing plant that was bidding for cream to be shipped by rail, enlarged the farmer's opportunity so that he was able to choose between a number of different ways of marketing his milk or cream. Naturally and properly, the farmer desires to get the most for his product. There have been a good many creameries of which the patronage was small and the expense of operating proportionately large, that have not been able to stand the competition of the larger concern to which the cream might be shipped, and so they have been obliged to quit business. It is very evident that the result of closing such a creamery has decreased the amount of butter made in that community, for the reason that only the larger patrons who can afford the farm separator, were able to have any market at all for their product, and so the smaller dairymen were obliged to churn their butter at home or go out of business altogether, and too many of them have chosen the latter alternative. That the centralizing plants have, in some greater or less measure, succeeded in decreasing the make of butter in the state, is certain. It does not follow, however, that this is sufficient reason for condemning the larger plants. The farmer who finds a market in which he can get more for his produce than in the one that he has usually patronized cannot be blamed for selling the product of his farm in the better market. A farmer cannot be blamed for shipping his cream to a better market than his local one, even though that has the effect eventually of removing the local market, and so injuring, in a way, his neighbor, who has less produce to sell than himself. The man with twenty cows cannot be expected to take less money per pound of butter fat than he can secure elsewhere when the only advantage to be gained is that the local market

may continue for the benefit of his neighbor who has only three or four cows, particularly when the man with three or four cows is responsible in large measure for the fact that the local market is not so good as the foreign market.

There is a temptation to dairy officials and others, who look upon the creamery and dairy business as a whole, to take great pride in a large aggregate make of butter, a large number of creameries in operation, and to feel something of a personal loss when creameries are closed, but the individual farmer is not subject to this kind of a temptation. He sells his milk or cream just as he sells his hogs and cattle; that is to say, in the best market at his command. For this reason the patrons of a good many small creameries have sent their cream to the larger plants and have so closed up the smaller plants. For exactly the same reason patrons of other local creameries have not sent their cream to the centralized plants. It will doubtless continue to be the case that in some localities the farmer will patronize the central plant, and that in others he will decline to do so and will stand by his local creamery.

The co-operative creamery has long served the dairy people of Iowa. It has added great wealth to those parts of the state where it has long flourished and it will take more evidence and longer experience than is now at hand to conclusively prove that its day of usefulness is past. Not one of the larger co-operative creameries has failed to be able to meet all competition up to this time, and it is a safe prophecy to make that they will continue to do so for an indefinite time in the future. There is a field for the centralizing plants and the shipping of cream, but there is not yet any evidence at hand to show that they are to be substitutes for the co-operative creameries or the local creameries of any kind. But the whole matter is not a question of sentiment, but a question of dollars and cents, and a question that must be settled by the individual producers of milk.

WATER CONTENT OF BUTTER.

A good many people do not seem to understand the legal provisions in regard to the water content of butter. Numerous inquiries come to this office asking whether creamery or farm made butter which might contain more than 16 per cent of water should be considered "adulterated butter." Considerable pains have been taken to secure from authoritative sources accurate information in regard to the situation under the present law.

There is no law of the United States fixing any standard for butter except for those grades or kinds which are specially taxed and which are now known to the law as Renovated Butter and Adulterated Butter. The Act of May, 1902, in defining adulterated butter, says practically that everything known and passed as butter shall be deemed adulterated, "in the manufacture or manipulation of which any process or material is used with *intent* or *effect* of causing the absorption of abnormal quantities of water, milk or cream." It was evident at the outset that there must be some more definite line of distinction, for purposes of revenue administration, between adulterated butter and renovated butter, so far as this particular feature was concerned. Therefore the Secretary of the Treasury and the Secretary of Agriculture united in declaring that renovated butter having 16 per cent or more of moisture would be held to contain "abnormal quantities of water, milk or cream," and be therefore classed as adulterated butter.

This is all the law and all the regulation there is on the subject. The standard of 16 per cent was used primarily to draw the line between renovated butter and adulterated butter, in cases where the only difference was the degree of water content. Note the expression "intent or effect" in the law as above quoted.

But under a strict construction of the law it is manifest that, if renovated butter containing 16 or more per cent of water therefore becomes legally adulterated butter, the same is true of any other butter. And, although there is no regulation upon the subject, it is certainly a fact that churning at too high a

temperature or under other peculiar conditions or any other equally simple manipulation or process which has "*the effect*" of causing the product to absorb or finally contain 16 per cent or more of water, milk or cream, must be legally "adulterated butter," no matter what the "intent" may have been and regardless of the absence of any intent to accomplish this result.

A moment's thought shows that the revenue department which has in charge the enforcement of this law, is not obliged to distinguish between an "intent" and an "effect." Hence, when the effect,—namely, 16 per cent or more of moisture in butter, is discovered, it must be assumed that this has resulted from some process or manipulation and that the product must be held to be adulterated, no matter where or how made, and with what purpose or intention. Consequently, if the Commissioner of Internal Revenue should have called to his attention a case in which butter had been made by any farm dairy or any creamery, by processes usual to it or in its ordinary operations, although the conditions might be temporarily peculiar and uncommon, and which butter evidently contained 16 per cent or more of moisture or such quantity of water, milk or cream as was undoubtedly abnormal, it is probable that he would consider it his duty to administer the law impartially, declare such product to be adulterated butter and apply the prescribed penalties (which are very severe) upon the manufacturer of the article.

Penalties may also be imposed, under an equally strict interpretation of the law, upon any person who *sells* butter of this character, no matter where produced, at either wholesale or retail, because of the specific provisions regarding dealers in adulterated butter, which are contained in the Act of 1902.

From the foregoing, it is manifestly important for everybody making or selling butter of any kind, who wants to avoid the possibility of getting into trouble by being held to be a manufacturer or dealer in adulterated butter, to see to it that the butter they make or handle *does not contain* "abnormal quantities of water, milk or cream." And as two departments of the government now hold that 16 per cent or more of moisture answers that definition, everybody concerned should be on the lookout to keep below this 16 per cent standard *for all butter*, unless it is to be regarded as adulterated butter and subjected to all the legal requirements accordingly.

From the foregoing it will be seen that it is very desirable that all butter makers, whether on the farm or in the creamery,

shall be sure not to allow their product to pass from their control containing 16 per cent or more moisture. It is manifestly impossible for the revenue officials to carry on anything like complete surveillance of all the butter manufactured, but creamery and dairy butter makers should not fancy themselves secure from prosecution because they do not hear of numerous cases in which farm and creamery-made butter have been classified as adulterated butter on account of containing abnormal quantities of water. The fact is that the revenue department is operated for the purpose of revenue and not for the purpose, primarily, of discouraging violations of the revenue laws, and the policy of that department has always been to maintain secrecy in regard to penalties and fines collected. This is why the dairy and creamery papers are unable to report specific instances of the enforcement of the law, but this office is informed upon good authority that the revenue officials have made very many seizures and confiscations of every kind and description of butter, including ladled butter, creamery butter, whey butter, as well as dairy butter, because the same contained more than 16 per cent of moisture, and hence was classified as adulterated. It is fair to the revenue department to say, however, that they have not attempted to penalize innocent holders of adulterated butter, but have attempted to get back to the original maker of it, who was responsible for the incorporation of the abnormal quantities of water, and with the evident intention of first reaching those who have purposely loaded their butter with an excess of water.

The United States Department of Agriculture has issued a bulletin giving the result of an investigation of the water content of American creamery butter, from which it is shown that the average moisture content of the samples was 11.78 per cent, and that only eight samples out of 802 were found to contain more than 16 per cent of moisture, from which it appears that under the usual and ordinary creamery conditions there is little likelihood that the butter will contain more than the prescribed maximum. However, those butter makers who are attempting to incorporate a reasonable amount of moisture in the butter in order that the overrun may be satisfactory should take great care not to exceed the 16 per cent of moisture in the butter.

GLASSWARE FOR BABCOCK TEST. CREAM TESTING.

In the last three or four years the quality and accuracy of glassware in use among the creameries of the state has very greatly improved. The Code of 1897 required that machines for operating the Babcock test should be examined by the director of the experiment station and by him certified regarding the accuracy thereof, and that the dairy commissioner should keep and furnish to the creameries standard certified glassware to be used in verifying the calibration of the glassware in use by the creameries. The manufacturers of glassware and the manufacturers of test machines as well, have greatly improved their apparatus since that law went into effect, so that it is not now so important a matter as it was at the time of its passage. Practically all test machines nowadays are made with a diameter of sixteen or seventeen inches and the speed required is about 1,000 revolutions. The accuracy of the glassware is much better than formerly, yet it is true that certain makers of test bottles have two grades. The better grade is guaranteed to be accurate and the other grade consists simply of "test bottles." This leads to the suspicion that cheap test bottles are the culls from the manufacturer's stock, and this department recommends very strongly that creameries refuse to purchase test bottles at any price unless they are guaranteed to be accurate, and on receipt of them they should be very carefully tested to see that the bottles are as guaranteed. Your creamery supply firm will furnish you for a reasonable price the best grade of glassware, guaranteed to be accurately calibrated, if you insist upon having that kind of glassware. The law of the state requires, and the self-interest of every creamery man demands, that the test shall be accurately made, a thing that cannot be accomplished with inaccurate glassware.

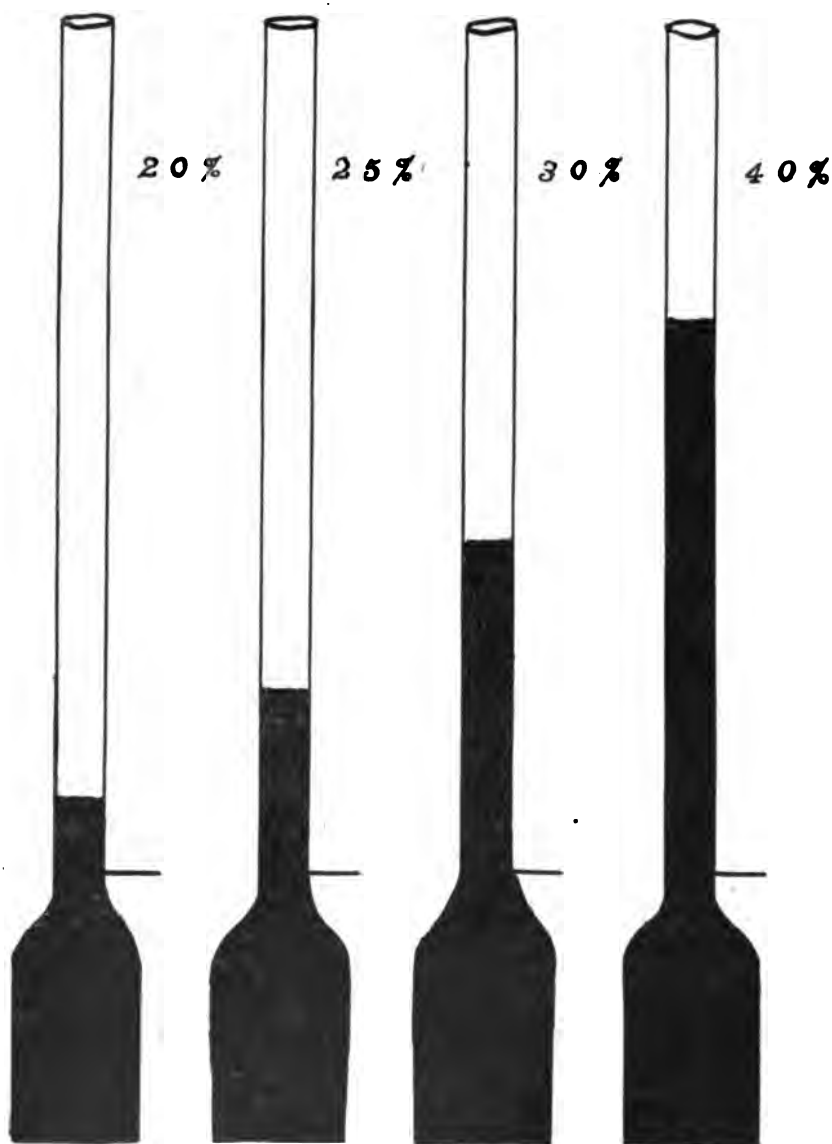
The growing number of hand separators and the increase in the amount of cream delivered to the creameries warrant some further remarks on the subject of cream testing. The only method of testing cream that will insure accurate results includes

the use of a scale for weighing the cream into the bottles. The accompanying sketch will show plainly the errors that would arise in the use of a pipette upon a cream fresh from the separator. The ordinary pipette graduated to 17.6 c. c. is a milk pipette, and if used in testing cream at all must be used only as a convenient means of getting the cream into the test bottle, and not as a measure. A 17.6 c. c. pipette will deliver 18 grams of milk. It will not deliver 18 grams of cream, as shown by the sketch given herewith. This is true when the cream is sweet and free from air bubbles and churned particles. It is evident that when cream is sour and filled with air bubbles, as it is when mixed or poured, a still greater capacity is necessary than that shown in the sketch.

The experiment station, some years since, sent out correction tables which were thought to be useful in cream testing, but in practical use the results obtained varied greatly, and the use of the correction table has been discarded by up-to-date operators. The law of this state requires accurate testing, and accurate testing of cream can only be secured by *weighing* each sample of cream tested, and justice to your patrons, as well as to yourself, demands that the pipette should not be used as a measure for cream and that the scale and the greatest care in its use should be substituted.

The original form of cream bottles read only to 30 per cent and in the old days of the gathered cream system and hand-skimmed cream, such bottles were sufficient. With hand-separator cream the 30 per cent bottle is very often not sufficient for the needs of the creamery, and so the manufacturers of glass-ware have put out two forms of the 50 per cent bottle, both of standard length, one having a straight-neck and the other a bulb in the neck. The straight-necked bottles can not be read with sufficient accuracy to be at all useful to the creamery man who must test cream ranging from 30 per cent to 40 per cent or 45 per cent. The bulb-necked bottles are made on the right principle, but cannot be used in testing cream that tests less than 30 per cent for the reason that the bulb is a 30 per cent bulb. Probably 75 per cent of all separator cream tests somewhere near 25 per cent to 30 per cent butter fat.

If one could know beforehand whether the cream would test more than 30 per cent, or less, then he would know whether to put it into a 30 per cent bottle or into a 50 per cent bottle having a 30 per cent bulb. To obviate this difficulty, the dairy



Showing the height to which cream, *free from air bubbles*, must be raised in a pipette to get 18 grams of cream. Indicates that the use of a pipette is necessarily inaccurate in cream testing.

commissioner has had made a 50 per cent bottle with a 20 per cent bulb. This bottle has 20 per cent of the scale below the bulb and with it one can test cream of any degree of richness if it does not run any more than 50 per cent butter fat. This bottle is made a half inch longer than the usual cream bottle and will not run in a machine having a diameter less than sixteen inches. It is believed that this bottle will be very useful because it can be used in the place of either 30 per cent or 50 per cent bottles mentioned above.

Special forms of testers having a diameter of twenty inches and a proportionate depth have been made for the use of 50 per cent or 55 per cent straight-necked cream bottles having a total length of nine inches, instead of the usual length of six or six and one-half inches. This allows the diameter of the neck of the bottle to be considerably reduced and hence the reading of the column can be a little more close than is the case with any of the other bottles mentioned.

The scale on the neck of the ordinary straight-necked 50 per cent. bottles is entirely too coarse to admit of accurate reading, and the use of such a bottle in cream testing is not countenanced by this office. The operator should use either the nine-inch 50 per cent. bottles requiring special form of tester or some form of the 50 per cent bulb-necked bottles.

Some cream scales are sent out with a 9-gram weight, so that by using half the 18-gram weight and the ordinary 30 per cent bottle, cream of any richness up to 60 per cent may be tested. A little thought will show that any error in the weighing of the 9 grams of cream or in reading the column of fat after the test is complete will be multiplied by two. Any inaccuracy in weighing the 9 grams of cream or in reading the column of fat will be just as great as the probable inaccuracy in weighing 18 grams of cream and in reading the column of fat derived from the test, so that in the first case the probable error will be twice as much as the second. It is therefore earnestly recommended that cream shall be tested by weighing into a proper bottle the full 18 grams of cream.

In handling cream in the test it will be found convenient to reverse the pipette and to take the cream into the pipette and discharge it from the larger end. The larger end of the ordinary pipette is usually long enough so that it may be used to take out of the bottle any excess of cream that may be poured in. It is obvious, of course, that the pipette must be thoroughly

rinsed after each sample of cream has been put into the bottle so that there may be no mixture of successive samples. By reversing the pipette this can be much more easily accomplished. Or the same convenience may be secured in less degree if the point of the pipette is cut off, thus enlarging the caliber of the lower end of the pipette.

Another convenience in testing cream is the acid dipper, a small glass dipper which holds 17.8 c.c. of acid, and its use is much more convenient than of the acid measure or any of the forms of combined acid measures and bottles.

Cream tests which do not result in a column of fat with a clear golden color are probably not accurate, at least they should be the subject of very grave suspicion. By mixing the cream and the acid at a temperature not above seventy degrees the too frequent black tests will be avoided.

The rule for reading a milk test is to read the whole column of fat from the bottom of the curve to the top of the column. This rule will scarcely apply for cream. A moment's thought shows that such a method reads more fat than there is in sight. In the case of milk this is a correct method for the reason that there is always a small amount of fat left in the liquid below the fat which no amount of whirling will take out and this will compensate for the high reading of the fat. It is evident that an amount no larger will be left in the liquid in a cream test. It is also evident that the error in reading from the extreme limits of the fat column will be much greater in the cream test than in the milk test. It is in fact ten to fifteen times as much as the error in reading a milk test. If the loss in the liquid below the column of fat in a milk test compensates for this error in reading, it will compensate for only one-tenth to one-fifteenth of the error in the cream test reading, and hence such a reading would be incorrect to a degree not permissible.

The top of the column of butter fat in a test shows three distinct lines. One is the extreme limit of the column of fat. Another is the curve formed by the downward curvature of the surface of the fat. The third is a line that appears between the other two. If the fat column is measured from its extreme lower limits to the lowest point in this third or middle curve shown by the top of the fat column, the reading will be very nearly or quite correct. If it is read from the extreme lower limit to the extreme higher limit it will be too great a reading for reasons set out above. If it is read from the extreme lower

limit to the lower of the three lines shown at the top of the column the reading will be too low for the reason that the line used at the top of the column is a good deal more of a curve than the one at the bottom, as will be seen by measuring in the manner just mentioned and then measuring from the points on the side of the bottle where the curves meet it.

The importance of accuracy in testing cream, both from the standpoint of the patron and from the standpoint of the creamery operator, who must satisfy the patron, is so great that no reasonable expense should be spared either of money in procuring a good scale and accurate glassware or of time and labor in making a satisfactory and accurate test.

CHEESE FACTORIES IN IOWA.

The report for last year showed fifty-two cheese factories in operation in Iowa, and the list found in this report shows but forty-three cheese factories. Nine of the cheese factories have gone out of business and two new ones have been established.

Of the cheese factories now in operation in the state, thirty-one factories report 20,621,763 pounds of milk, from which was made 2,039,921 pounds of cheese, and the patrons of these factories received \$174,864, which is almost exactly 85 cents per hundred pounds for the milk. The largest factory in the state receives almost three million pounds of milk and pays for it an average of 90 cents per hundred. The most successful factory in the state receives two million pounds of milk and pays for it an average price of \$1.08. The difference between these factories is that the larger one is not in a dairy district and the other one is, hence, the cost of getting the milk to the factory is less in the one case than in the other. The prices paid by other cheese factories range down as low as 68 cents per hundred pounds.

The average production of these thirty-one cheese factories which have reported appears, therefore, to be about 65,800 pounds of cheese per annum, and on this basis the forty-three cheese factories now in operation in the state would make approximately three million pounds of cheese, worth perhaps \$300,000. From the foregoing figures, it will be seen at once that the cheese business in Iowa is not a very great amount, and proba-

bly so long as conditions remain the same as they are now, the cheese business will continue to be of little importance in the state. The relative prices paid per hundred pounds of milk by cheese factories and creameries may be a matter of some interest to those who are unable to account for the small number of cheese factories in the state. A certain Delaware county creamery, making 165,000 pounds of butter last year, paid its patrons \$1.01 per hundred pounds of milk. It is evident that a cheese factory which could only pay an average price of 85 cents per hundred pounds of milk could not exist in that community and successfully compete with the creamery. The creameries of Bremer county last year paid an average price of 82 cents per hundred pounds of milk. No cheese factory could compete with these creameries unless it were able to pay a considerable amount per hundred more than the creameries are paying. It is evident that the expense of getting the milk to the creamery will not be more than that of transporting the milk to a cheese factory, and that the skimmed milk will be of much greater value than the whey which the farmer gets back. It is true, however, that other creameries that are not so successfully operated as the one with which the above comparisons are made have not been able to pay as much as the creameries mentioned above, and in these localities a cheese factory could easily compete with the creameries.

The cheese business does not seem to be adapted to all localities where milk can be easily and cheaply produced. Every northern state, with the exception of those in the semi-arid district of the Middle West, is a large producer of butter, but the same is not at all true in regard to cheese production. Nearly all the cheese is made in the states of New York and Wisconsin, and Iowa with its small number of cheese factories is given sixth place in cheese production by the national census of 1900. There are communities in Iowa where large and successful cheese factories are in operation, so that it is conclusively proved by them that cheese can be profitably made in Iowa, but it is doubtless true that so long as the profits in butter making are equal to those of cheese making, the number of cheese factories in this state will be relatively small, for the reason that the making of butter and the utilization of the skimmed milk is more to the taste of the stock raising farmer than the making of cheese and the use of whey.

CREAMERY LIST.

List of Creameries in the State, Alphabetically Arranged According to Counties and Towns near which Creameries are Located, Together with Information Pertaining to Each.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or method of gathering cream.	Method of testing milk.
<i>Adair County</i>								
1	Adair	Adair Co-oper. Creamery Co.	Co-op.	A. O. Curtis, Secretary.	Adair	O. E. McIntire.	S. & G. C. Separator	Test.
2	Arbor Hill	Arbor Hill Co-op. Creamery Co.	Co-op.	O. O. Pease, Secretary	Stuart	R. J. Erb	Separator	Test.
3	Fontanelle	Blue Grass Creamery	Indiv.	A. L. Stewart & Co.	Fontanelle	W. F. Stewart	Separator	Test.
4	Canby	Blue Grass Creamery (s)	Indiv.	A. L. Stewart & Co.	Fontanelle		Separator	Test.
5	Flak	Blue Grass Creamery (s)	Indiv.	A. L. Stewart	Fontanelle		Separator	Test.
6	Greenfield	Blue Grass Creamery (s)	Indiv.	A. L. Stewart	Greenfield	Albert He. n	Separator	Test.
7	Prussia	Blue Grass Creamery (s)	Indiv.	A. L. Stewart	Greenfield		Separator	Test.
8	Greenfield	Greenfield Creamery Co.	Stock.	Jas. F. Laude, Sec and Mgr	Greenfield		Separator	Test.
9	Stuart	Howe Co-oper. Creamery Co.	Co-op.	J. N. Campbell, Secretary	Stuart	F. L. Odell	Separator	Test.
10	Orient	Tri-State Creamery Co. (s)	Stock.	R. T. McCall, Manager	Chicago, Ill.	A. M. Franden	Separator	Test.
11	Bridgewater	Blue Grass Creamery	Indiv.	A. L. Stewart & Co.	Fontanelle	A. W. McCall	Separator	Test.
12	Beres	Blue Grass Creamery (s)	Indiv.	A. L. Stewart & Co.	Fontanelle	M. N. Bates	Separator	Test.
13	Hebron	Hebron Creamery	Indiv.	D. F. Hammers, Proprietor	Hebron	D. F. Hammers	S. & G. O. Separator	Test.
<i>Adams County</i>								
14	Prescott	Prescott Butter & Cheese Ass'n.	Co-op.	G. W. Iden, Secretary	Prescott	Franklin Beal	Separator	Test.
15	Carl	Prescott But. & Cheese Ass'n (s)	Co-op.	G. W. Iden, Secretary	Prescott		Separator	Test.
16	Williamson	Prescott But. & Cheese Ass'n (s)	Co-op.	G. W. Iden, Secretary	Prescott		Separator	Test.
<i>Allamakee County</i>								
17	Dorchester	Dorchester Creamery Co.	Stock.	T. O. Smith & Co.	Dorchester	Ben W. Schalte	Gath. Cr.	In. & T. Oil test.
18	Fontanelle	Fontanelle Co-op. Cream. Co.	Co-op.	J. W. H. Weisall, Secretary	Church	E. V. Herrie	Separator	Oil test.
19	Waterville	The Far Co-op. Cream. & Com. Co.	Co-op.	Peter Ameson, Secretary	Postville	James A. Gordon	Gath. Cr.	Oil test.
20	Waterville	Ludlow Co-oper. Creamery Co.	Co-op.	F. A. Janderson, Secretary	Waterville	W. W. Heesol	Gath. Cr.	Oil test.
21	Waukon	Arctic Spring Creamery	Indiv.	H. G. Blaher, Secretary	Waukon	W. F. Ruthgill	Separator	Oil test.
22	Waukon	Far. Waukon Co-op. Cream. Co.	Co-op.	H. G. Blaher, Secretary	Waukon	D. B. Olson	S. & G. O. Separator	In. & T. Oil test.

CREAMERY LIST—CONTINUED.

Office Record	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or milk-clender.	Method of receiving milk.
<i>Boone County—</i>							
62	Boone	Soenke Bros.	Indiv.	P. F. & G. F. Soenke	P. F. & G. F. Soenke	Separator	Test.
63	Bozholm	Bozholm Co-op. Creamery Co.	Co-op.	Lawrence Johnson, Sec.	Joe Michel	Separator	Test.
64	Rosedale	Rosedale Co-op. Creamery Co.	Co-op.	M. P. Peterson, Secretary	L. C. Peterson	Separator	Test.
65	Bouton	Woodward Creamery (s)	Indiv.	H. P. Caloney, Proprietor	Woodward	Separator	Test.
<i>Bremer County</i>							
66	Bremer	Bremer Creamery Co.	Co-op.	F. C. Kollagen, Secretary	Wm. Kollenbach	Separator	Test.
67	Bremer	Western Douglas Creamery Co.	Co-op.	Aug. Hoppenworth, Sec.	Frank Finch	Separator	Test.
68	Sumner	Little Valley Creamery Co.	Co-op.	Fred Sechase, Secretary	H. O. Ladage	Separator	Test.
69	Denver	Farrington Creamery	Co-op.	F. Garton, Secretary	S. & G. C.	Separator	Test.
70	Denver	First Maxfield Co.	Co-op.	Wm. Millus, Secretary	H. O. Squier	Separator	Test.
71	Frederika	Frederika Creamery Ass'n	Co-op.	J. H. McDonald, Secretary	John Wedemeyer	Separator	Hund.
72	Denver	Klinger Creamery Co.	Indiv.	C. H. Dickmann, Prop.	Cecil E. Carr	Separator	Test.
73	Knittel	Maxfield Creamery Co.	Co-op.	J. H. Strottmann, Secretary	C. H. Bohrsen	Separator	Hund.
74	Sumner	Climax Creamery Co.	Co-op.	Henry Specht, Secretary	F. Wills	Separator	Hund.
75	Sumner	Sumner Creamery Co.	Co-op.	H. E. Watkins, Secretary	O. L. Mills	Separator	Test.
76	Sumner	Sumner Creamery Co.	Co-op.	John Dawson, Secretary	Robert Madlie	Separator	Hund.
77	Tripoli	Fremont Creamery Co.	Co-op.	A. P. Braun, Secretary	John E. Smith	Separator	Test.
78	Tripoli	Potter's Siding Creamery Co.	Stock	H. W. Willmard, Manager	Wm. Ambros	Separator	Hund.
79	Tripoli	Artisan Creamery Co.	Co-op.	C. Jahnke, Secretary	F. C. Oltrogge	Separator	Hund.
80	Denver	Artisan Creamery Co.	Co-op.	H. Graening, Secretary	E. H. Homan	Separator	Hund.
81	Waverly	LaFayette Creamery Co.	Co-op.	L. C. Oberdorf, Secretary	Henry Piegors	Separator	Test.
82	Waverly	Washington Co-op. Crm. Co.	Co-op.	S. M. Lehman, Secretary	D. A. Bottermann	Separator	Test.
83	Tripoli	Siegel Creamery Co.	Stock	J. Jones, Secretary	Wm. Lenius	Separator	Hund.
84	Waverly	Wisconsin Condensed Milk Co.	Co-op.	Wm. A. Douglas	C. E. Patchin	Separator	Test.
85	Grove Hill	Grove Hill Creamery Co.	Co-op.	A. F. Schmeltzer, Secretary	F. D. Daniels	Separator	Hund.
86	Sumner	Spring Fountain Creamery Co.	Co-op.	Joe Volker, Secretary	Fred Sumner	Separator	Hund.
<i>Buchanan County</i>							
87	Aurora	Aurora Creamery	Indiv.	Geo. L. Weeks, Proprietor	O. R. Flahtemler	Separator	Test.
88	Brandon	Brandon Creamery Co.	Co-op.	W. W. Bain, Secretary	M. E. Benson	Separator	Test.
89	Fairbank	Fairbank Farmers' Crm. Co.	Co-op.	E. Sanborn, Secretary	H. H. Opperman	Separator	Test.
90	Hazleton	Hazleton Farmers' Creamery	Stock	N. C. Peck, Secretary	Frank Strong	S. & G. C.	Test.

91	Independence	The Palmer-Hubbard Co.	Stock.	C. B. Hubbard, Manager.	Independence	D. H. Macomber.	Separator	Test.
92	Rowley	The Palmer-Hubbard Co. (s) ..	Stock.	C. B. Hubbard, Manager.	Independence .....	.....	Separator	Test.
93	Littleton	The Palmer-Hubbard Co. (s) ..	Stock.	C. B. Hubbard, Manager.	Independence .....	.....	Separator	Test.
94	Vista	The Palmer-Hubbard Co. (s) ..	Stock.	C. B. Hubbard, Manager.	Independence .....	.....	Separator	Test.
95	Jenup	Jenup Creamery Co.	Co-op.	C. L. Bright, Secretary.	Jenup	E. M. Varpason.	Hand Sep.	Test.
96	Lamont	Lamont Creamery Co.	Co-op.	James C. Heener, Secretary.	Lamont	F. S. Jackson.	S. & G. C.	Test.
97	Otterville	Otterville Creamery Co.	Co-op.	J. F. Booth, S. cretary.	Independence, R. 3	Ira S. Hutton.	Separator	Test.
98	Rowley	Rowley Co-op. Creamery Co.	Co-op.	Geo. L. Weeks, Proprietor.	Rowley	Herbert Brokaw.	S. & G. C.	Test.
99	Stanley	Stanley Creamery Co.	Indiv.	Geo. L. Weeks, Proprietor.	Aurora	Arthur Strong.	Separator	Test.
100	Winthrop	Winthrop Creamery (s)	Stock.	J. J. Plank, Manager.	Winthrop	W. H. Plank.	Separator	Test.
101	Quasqueton	Winthrop Creamery (s)	Stock.	J. J. Plank, Manager.	Winthrop .....	.....	Separator	Test.
102	Newtonville	Winthrop Creamery (s)	Stock.	J. J. Plank, Manager.	Winthrop .....	.....	Separator	Test.
103	Middlefield	Winthrop Creamery (s)	Stock.	J. J. Plank, Manager.	Winthrop .....	.....	Separator	Test.
<i>Buena Vista County—</i>								
104	Albert City	Fairfield Creamery Co.	Co-op.	A. J. Ryden, Secretary.	Albert City	S. M. Geyer.	S. & G. C.	Test.
105	Newell	Coon River Co-op. Creamery Co.	Co-op.	A. J. Ryden, Secretary.	Newell	C. A. Allison.	S. & G. C.	Test.
106	Varina	Newell Cheese Factory Co. (s) ..	Co-op.	Wm. Huxtable, Secretary.	Newell	Geo. Allard.	S. & G. C.	Test.
107	Storm Lake	Newell Creamery Co.	Stock.	Geo. W. Cole, Secretary.	Storm Lake	P. C. Flackegard.	Gath. Or.	Test.
108	Albert City	Fairfield Creamery Co. (s) ..	Co-op.	Geo. Ryden, Secretary.	Albert City .....	.....	S. & G. C.	Test.
109	Alta	Alta Creamery	Indiv.	E. W. Geyer.	Storm Lake .....	.....	Separator	Test.
<i>Butler County—</i>								
111	Aplington	Aplington Co-op. Creamery Co.	Co-op.	R. B. Eckles, Secretary.	Aplington	Wm. Gilbert.	Separator	Test.
112	Atterville	White Rose Creamery	Indiv.	S. Patterson.	Atterville	S. Patterson.	Separator	Test.
113	Allison	Allison Creamery	Indiv.	W. J. Daniels, Proprietor.	Allison	C. Stevens.	Separator	Test.
114	Greene	Cold Water Co-op. Dairy Assn.	Co-op.	Paul Daniels, Proprietor.	Greene	P. J. Hensley.	Gath. Or.	Ob. Test.
115	Clarksville	Clarksville Creamery Co.	Stock.	E. J. Wilcox, Manager.	Clarksville	W. D. Barkley.	Separator	Test.
116	Dumont	Dumont Creamery	Stock.	T. I. Laird, Secretary.	Dumont	A. W. Snyder.	Separator	Test.
117	Arcade	Dumont Creamery (s)	Stock.	T. I. Laird, Secretary.	Dumont	C. Wisbar.	Separator	Test.
118	Eleanor	Montroe Central Creamery	Co-op.	A. Onley, Secretary.	Aplington .....	.....	Separator	Test.
119	Parkersburg	Montroe Central Creamery (s) ..	Co-op.	A. Onley, Secretary.	Aplington	A. M. Whitney.	Separator	Test.
120	Kesley	Kesley Creamery	Indiv.	J. F. Schirrmann, Prop.	Aplington	W. F. Graham.	Separator	Test.
121	New Hartford	Crested Creamery	Co-op.	Ed. Fitch, Secretary.	New Hartford .....	.....	Separator	Test.
122	New Hartford	Beaver Creamery Co.	Stock.	W. D. Cooperly, Manager.	New Hartford, R. 2	Peter Larson.	Separator	Test.
123	Parkersburg	Parkersburg Creamery	Stock.	W. H. Codner, S. cretary.	Parkersburg	W. H. Codner.	Separator	Test.
124	Sinclair	Parkersburg Creamery (s)	Stock.	W. H. Codner, Secretary.	Parkersburg	M. J. Johnson.	S. & G. C.	Test.
125	Shell Rock	Shell Rock Creamery	Indiv.	M. J. Johnson, Manager.	Shell Rock	A. Olson.	S. & G. C.	Test.
126	Shell Rock	Columbian Creamery	Co-op.	Hall & Olson, Proprietors.	Shell Rock	Julius Ahlenstorf.	Hand Sep.	Test.
127	Shell Rock	Victory Creamery	Co-op.	A. B. Shadbolt, Sec. & Mgr.	Waverly	Fred H. Fisher.	H. S. & G. C.	Test.
128	Shell Rock	Walker Creamery	Indiv.	A. B. Walker, Proprietor.	Shell Rock .....	.....	Separator	Test.
129	Elmar	Northern West Point Grm. Co.	Co-op.	Herman, Debnor, Secy.	Greene, R. 2	O. F. Courbat.	Separator	Test.
130	New Hartford	Albion Creamery Co.	Co-op.	O. F. Courbat, Secretary.	New Hartford, R. 1 .....	.....	Separator	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of re-ceiving milk.
Calhoun County								
131	Knoke.....	Butler Center Co-op. Crm. Co.	Co-op.	H. A. Albright, Secretary.	Knoke.....	J. P. Cummings.	Separator	Test.
132	Lytton.....	Blue Grass Creamery.....	Indiv.	J. Hillmann.....	Lytton.....	Geo. Hillmann.	Separator	Test.
133	Lake City.....	The Far. Co-op. Mut. Crm. Assn.	Co-op.	H. B. Farmer, Secretary.	Lake City..	Carl Lisner.....	S. & G. C.	Test.
134	Lytton.....	William Co-op. Creamery Co.	Co-op.	Henry Klukenberg, Sec.	Fonda.....	O. Olson.....	Separator	Test.
135	Manson.....	Manson Creamery.....	Indiv.	G. B. Moon.....	Manson.....	Chas. Moon.....	S. & G. C.	Test.
136	Pomeroy.....	Pomeroy Co-oper. Creamery.	Co-op.	John Behrends, Secretary.	Pomeroy.....	J. E. Lauridsen.	S. & G. C.	Test.
137	Rockwell City.....	Andrew Wood Co.	Stock.	Andrew Wood, President.	Rockwell City.	Henry Belfrance.	S. & G. C.	T. & H.
138	Lytton.....	Andrew Wood Co. (s)	Stock.	Andrew Wood, President.	Rockwell City.	Henry Belfrance.	S. & G. C.	T. & H.
Carroll County								
139	Arcadia.....	Golden Star Creamery Co.	Stock.	C. Wiebers, Secretary.	Arcadia.....	S. J. Jans.....	Separator	Test.
140	Breda.....	Viola Mutual Creamery Ass'n.	Co-op.	Paul Luckow, Secretary.	Breda.....	Chris. Lorensen.	Separator	Test.
141	Coon Rapids.....	Coon Rapids Creamery Co.	Indiv.	H. L. Fiest, Proprietor.	Coon Rapids	A. R. Wright.....	Separator	Test.
142	Edham.....	Edham Creamery.....	Indiv.	Reeco Lewis, Proprietor.	Edham.....	Reeco Lewis.....	S. & G. C.	Test.
143	Habur.....	Habur Creamery Co.	Indiv.	Reeco Lewis, Proprietor.	Habur.....	M. J. Wagner.....	Separator	Hund.
144	Lanesboro.....	Lanesboro Farmers Co-op. Mut. Creamery Co.	Co-op.	Henry Miller, Secretary.	Glidden.....	L. R. Winn.....	S. & G. C.	Test.
145	Manning.....	Washington Twp. Creamery.	Co-op.	John J. Kruse, Secretary.	Manning.....	C. H. Ramsey.....	Separator	Test.
146	Mt. Carmel.....	Mt. Carmel Mut. Creamery Co.	Co-op.	Martin J. Berger, Secretary.	Carroll, Route 2.	Joseph A. Stamen.	Separator	Test.
147	Roselle.....	Roselle Valley Creamery.....	Indiv.	O. K. Voss, Proprietor.	Roselle, Route 4.	C. K. Voss.....	Separator	Hund.
148	Roselle.....	Roselle Creamery.....	Indiv.	Virgil Young, Proprietor.	Roselle.....	Virgil Young.....	Separator	Test.
149	Templeton.....	Templeton Creamery Co.	Stock.	Geo. Blom, Manager.	Templeton.	August Thielecke.	Separator	Test.
150	Manning.....	Manning Creamery.....	Indiv.	H. A. Sweger, Manager.	Manning.....	O. P. Yant.....	Cath. Or.	Test.
Cass County								
151	Atlantic.....	Tri-State Creamery Co.	Indiv.	Cabe & McKinnon, Props.	Chicago, 100 Wash'n St.	T. B. Russell.....	Separator	Test.
152	Marne.....	Tri-State Creamery Co. (s)	Indiv.	Cabe & McKinnon, Props.	Chicago, 100 Wash'n St.	T. B. Russell.....	Separator	Test.
153	Marne.....	Tri-State Creamery Co. (s)	Indiv.	Cabe & McKinnon, Props.	Chicago, 100 Wash'n St.	T. B. Russell.....	Separator	Test.
154	Orrinland.....	The Far. Mut. Co-op. Crm. Assn.	Co-op.	Wm. J. Spies, Secretary.	Cumberland.....	A. M. Ohrlenson.	Separator	Test.
155	Orrinland.....	The Far. Mut. Co-op. Crm. Assn.	Co-op.	Wm. J. Spies, Secretary.	Cumberland.....	W. R. Carol.....	Separator	Test.
156	Ostrus.....	Tri-State Creamery Co. (s)	Indiv.	Cabe & McKinnon, Props.	Griswold.....	W. R. Carol.....	Separator	Test.
157	Viola.....	Farmer's Co-oper. Creamery.	Co-op.	E. W. Bowen.....	Griswold.....	W. R. Carol.....	Separator	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER-MAKER.	Separator or creamery.	Method of receiving milk.
<i>Clay County—</i>								
196	Dickens	Farmers Co-op. Creamery Co.	Co-op.	Wm. McCurdy Sec. and Mgr.	Dickens	A. L. Remington	Separator	Test.
197	Fosteria	Royal Creamery Co.	Stock	Frank Riley Secretary	Fosteria	Frank Riley	Separator	Test.
198	Royal	Royal Creamery Co.	Indiv.	McKay and Senke, Prop'rs	Royal	A. Christensen	Separator	Test.
199	Langdon	Langdon Co-op. Creamery Co.	Co-op.	E. Kling, Sec. and Mgr.	Langdon	Wm. Johnson	Separator	Test.
200	Spencer	Spencer Creamery	Indiv.	W. L. Kepler, Proprietor	Spencer	Wm. Kepler	Separator	Test.
201	Terrell	Trumbull Lake Creamery Co.	Stock	W. E. Cooper	Terrell	W. W. Boldt	Separator	Test.
202	Webb	Webb Creamery	Indiv.	J. A. Reid, Proprietor	Webb	J. A. Reid	Separator	Test.
203	Gillett's Grove ..	Gillett's Grove Creamery	Indiv.	C. N. Parsons	Gillett's Grove	J. A. Reid	Separator	Test.
<i>Clayton County</i>								
204	Elkader	Highland Farmers Cr'y. Ass'n.	Co-op.	G. Gregerson, Secretary	Elgin, Iowa	H. L. Mickelson	s & G. C.	Test.
205	Elkader	Elkader Creamery	Stock	H. R. Carpenter, Secretary	Elkader	Harvey Clough	Hand sep.	Test.
206	Edgewood	Fidelity Creamery	Indiv.	H. F. Beyer, Proprietor	Edgewood	Ed J. Whipple	s & G. C.	Test.
207	Elkport	Elkport Creamery	Indiv.	H. F. Beyer, Proprietor	Edgewood	Ed J. Whipple	s & G. C.	Test.
208	Farmersburg ..	Farmersburg Co-op. Cr'y Co.	Co-op.	John Johnson, Secretary	St. Olaf R. I.	Hans J. Fries	Gath Cr.	Test.
209	Garnaville	Garnaville Farm's Co-op. Cr'y Co.	Co-op.	H. Kuhlman, Secretary	Garnaville, Ia.	C. B. Hendershott	Gath Cr.	H. & O. L.
210	Launa	Launa Farmers Co-op. Cr'y Co.	Co-op.	John H. Hanson, Secretary	Garnaville, Ia.	C. B. Hendershott	Gath Cr.	Test.
211	Littleport	Littleport Creamery	Indiv.	J. F. Beyer, Proprietor	Launa	James A. Barker	Gath Cr.	Test.
212	Littleport	Communa Creamery	Stock	H. R. Carpenter, Manager	Edgewood	Darr Whipple	s & G. C.	Test.
213	Monona	Monona Creamery	Stock	H. R. Carpenter, Manager	Elkader	Peter Kluck	Separator	Test.
214	Osterdock	Osterdock Creamery	Stock	H. R. Carpenter, Manager	Elkader	R. L. Legley	Separator	Test.
215	McDerville	McDerville Creamery	Stock	H. R. Carpenter, Manager	Elkader	A. L. Peacock	s & G. C.	Test.
216	McGregor	J. D. Bickel Produce Co.	Stock	M. V. Bickel, Secretary	Elkader	A. L. Schneerman	Separator	Test.
217	Strawberry Point	Strawberry Pt. Fr. Co-op. Cr'y Ass.	Co-op.	O. C. Gudwin, Secretary	McGregor	C. C. Corlett	Gath Cr.	Test.
218	St. Olaf	St. Olaf Farmers Creamery Co.	Co-op.	G. R. Engelhardt, Sec.	Strawberry Point	H. J. Evans	Separator	Test.
219	Volga City	Farmers Co-op. Creamery Co.	Co-op.	Wm. Leue, Secretary	St. Olaf	Jack Frisby	Gath Cr.	Test.
220	Watson	Blue Grass Creamery	Co-op.	John Geraghty, Secretary	Volga City	Joe Jones	Separator	Test.
221	Gander	Clermont Valley Cr'y Co. (s)	Co-op.	F. F. Ferguson, Secretary	McGregor R. I.	F. A. Fiete	Gath Cr.	Test.
<i>Clinton County—</i>								
222	Clinton	Clinton Creamery	Indiv.	J. Wright & Sons	Clinton	R. J. Wright	Gath Cr.	O. & T.
223	Danvers Junction	Springbrook Creamery	Indiv.	John Newman Co.	Clinton, Ill.	L. J. Spohn	Separator	Test.
224	Edwood	Springbrook Creamery	Indiv.	John Newman Co.	Elgin, Ill.	F. W. Leinbaugh	Separator	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTERMAKER.	Separator or gathering of cream.	Method of re-ooling milk.
280	Manchester	Barryville Creamery	Stock	Michael Barr.	Ryan	James Beck	Separator	Test.
281	Hopkinton	Hopkinton Co-op. Creamery	Co-op.	M. L. McElide, Sec. & Mgr.	Hopkinton	J. H. Griffith	Separator	Test.
282	Petersburg	Beaver Grove Co-op. Crm. Co.	Co-op.	P. H. Klaerman, Sec.	Dyersville	Geo. Domayer	Separator	Test.
283	Delaware	Delaware Creamery Co.	Stock	C. H. Ansell, Sec'y	Delaware	McDonald	Separator	Test.
284	Earlville	Earlville Creamery	Indiv.	J. M. Dunn, Proprietor	Earlville	F. B. Zettler	Separator	Test.
285	Earlville	Gilt Edge Creamery	Indiv.	J. M. Dunn, Proprietor	Earlville	E. J. McCaffery	Separator	Test.
286	Manchester	Manchester Co-op. Creamery	Co-op.	James Balton, Secretary	Manchester	C. D. Eldor	Separator	Test.
287	Masonville	Masonville Co-op. Creamery Co.	Co-op.	F. S. Harris, Secretary	Masonville	W. S. Smarzo	Separator	Test.
288	Almora	Almora Creamery Co.	Co-op.	F. L. Carpenter, Secretary	Almora	J. J. Schmidt	Separator	Test.
289	Delhi	Silver Spring Creamery	Stock	Chas. A. Howard, Manager	Delhi	Chas. A. Howard	Separator	Test.
290	Petersburg	Petersburg Co-op. Crm. Co.	Co-op.	H. H. Scherbing, Sec. & Mgr.	Petersburg	Ed. Budden	Separator	Test.
291	Petersburg	Spring Branch Creamery	Stock	J. B. Higman, Sec. & Mgr.	Manchester	A. A. Palmer	Separator	Test.
292	Thorp	Farmers Co-op. Creamery Co.	Co-op.	M. E. Blair, Secretary	Manchester	W. K. Pollard	Separator	Test.
293	Sand Spring	Sand Spring Co-op. Crm. Co.	Co-op.	T. E. Wood, Sec'y	Sand Spring	Anton Smith	Separator	Test.
294	Ryan	The Palmer-Hubbard Co.	Co-op.	C. B. Hubbard, Manager	Independence	O. J. Robde	Separator	Test.
295	Ryan	The Palmer-Hubbard Co. (s)	Co-op.	C. B. Hubbard, Manager	Independence		Separator	Test.
296	Bradway	The Palmer-Hubbard Co. (s)	Co-op.	C. B. Hubbard, Manager	Independence		Separator	Test.
297	Willow Grove	The Palmer-Hubbard Co. (s)	Co-op.	C. B. Hubbard, Manager	Independence		Separator	Test.
298	Ryan	Silver Creek Creamery	Indiv.	Geo. E. Packard, Proprietor	Ryan	Geo. Packard	Separator	Test.
299	Ryan	Silver Creek Creamery (s)	Indiv.	Geo. E. Packard, Proprietor	Ryan		Separator	Test.
300	Onedia	Onedia Creamery Station	Indiv.	F. M. Burbridge, Prop.	Onedia	Thos. Dickson	Separator	Test.
301	Dundee	Dundee Co-op. Creamery Co.	Co-op.	Nathan Patton, Proprietor.	Onedia	Dan Babcock	Separator	Test.
302	Ehler	Ehler Creamery	Indiv.		Ehler		S. & G. O.	Test.
<i>Dickinson County—</i>								
303	Lake Park	Lake Park Far. Co-op. Crm.	Co-op.	J. G. Choyaler, Secretary	Lake Park	Ed. Star	S. & G. O.	Test.
304	Milford	Milford Fara. Btt. & C. Ass'n.	Co-op.	H. H. Shipman, Secretary	Milford	J. O. Miller	Separator	Test.
305	Spirit Lake	Farmers Co-op. Crm. Ass'n.	Co-op.	A. F. Bergman, Secretary	Spirit Lake	Geo. Williams	S. & G. C.	Test.
306	Terrill	Terrill Co-op. Creamery Co.	Co-op.	Mrs. J. O. Woods, Secretary	Terrill	W. O. Frank	Separator	Test.
<i>Dubuque County—</i>								
307	Baltown	Baltown Co-op. Creamery Co.	Co-op.	O. D. Harrington, Secretary	Specht's Ferry	Henry Koehler	Separator	Hund.
308	Chasade	Spring Valley Co-op. Crm. Co.	Co-op.	John H. Kremer, Secretary	Parley, R. 10.	W. Thompson	Separator	Test.
309	Chasade	Chasade Co-op. Creamery Co.	Co-op.	P. J. Conlin, Secretary	Chasade	U. M. Elliott	Separator	Test.
310	Dyersville	Hickory Valley Creamery	Stock	John Hamm, Secretary	Parley, R. 17	Frank Ruby	Separator	Test.

321	Dyersville.....	Farmers Golden Star Creamery	Co-op.	P. P. Kern.	Dyersville.....	John B. Feldmann	Separator	Test.
322	Epworth.....	Epworth Creamery Co.	Co-op.	J. D. Burrell, Secretary	Epworth.....	E. L. Beers	Separator	Test.
323	Fillmore.....	Fillmore Co-op. Creamery Co.	Co-op.	Wm. Fagan, Secretary	Fillmore.....	J. G. Stemmer	Separator	Test.
324	Farley.....	Johns Creek Creamery	Indiv.	A. K. Heald & Son, Props.	Farley.....	Robt. Parrott	Separator	Test.
325	Farley.....	Farley Creamery Co.	Co-op.	G. W. Cron, Manager	Farley.....	Thos. Landis	Separator	Test.
326	Orcutt.....	Oak Grove Creamery	Co-op.	Jonathn. P. Bailey, Secretary	Wapelon, R. 30	H. Sylvester	Separator	Test.
327	Lathams.....	Lathams Spring Creamery	Indiv.	Joe C. Bredbach, Secretary	Keweenaw, R. 4	Henry Williams	Separator	Test.
328	Luxemburg.....	Globe Creamery Co.	Co-op.	Joe Friedman	North Buena Vista		Separator	Test.
329	New Vienna.....	New Vienna Central Crm. Co.	Stock	Bernard Hepners, Secretary	La, R. 1	B. Goetzinger	Separator	Test.
330	Richardsville.....	Farm Creamery Co.	Stock	John Fisher, Secretary	New Vienna	Frank Tugler	Separator	Test.
331	Richardsville.....	Riverside Creamery	Co-op.	Edward Semmler, Secretary	Dubuque, R. 1	John W. Farm	Separator	Test.
332	Sherrill.....	Sherrill Creamery Co.	Co-op.	P. C. Boley, Secretary	Specht's Ferry, R. 1	Vict. Schumert	Separator	Test.
333	Worthington.....	Worthington Creamery	Indiv.	C. Baehler, Proprietor	Worthington	Joe Stillmunkes	Separator	Test.
334	Zwingle.....	Other Creek Creamery (4)	Indiv.	S. P. Laible, Proprietor	Zwingle	C. Baehler	Separator	Test.
335	Bely Cross.....	Pin Oak Creamery Co.	Stock	S. P. Wadley, Secretary	Nor Buena Vista	John Opps	Separator	Test.
336	Dubuque.....	S. F. Wadley & Son Creamery	Indiv.	Laible Bros	Dubuque	J. C. Waller	Grain. Or	Test.
337	Dubuque.....	Columbian Creamery	Indiv.	Frank Woodring	Dubuque	Geo. Werner	Separator	Test.
338	Dubuque.....	Dubuque Butler and Milk Co.	Indiv.		Dubuque		Grain. Or	Test.
339	Dubuque.....	Love Co-op. Creamery Co.	Co-op.		Dubuque		Separator	Test.
Emmet County—								
310	Armstrong.....	Farmers Creamery Co.	Co-op.	P. H. Burt, Secretary	Armstrong	H. Ohronholm	Separator	Test.
311	Barberville.....	Barberville Creamery	Indiv.	John B. Keachie, Proprietor	Barberville	John B. Keachie	Separator	Test.
312	Barberville.....	Halfa Co-op. Creamery	Co-op.	Daniel Booth, Sec. and Mgr	Barberville	E. A. Bacon	Separator	Test.
313	Huntington.....	Huntington Co-op. Crm. Ass'n	Co-op.	L. L. Dooler, Secretary	Huntington	Beni E. Lanning	Separator	Test.
314	Hoprig.....	Hoprig Farmers Creamery Co.	Co-op.	Miss E. R. Boyold, Secretary	Hoprig	Julius Jensen	Separator	Test.
315	Ringsted.....	Denmark Creamery Co.	Co-op.	H. J. Flak, Secretary	Ringsted	Peter Knudsen	Separator	Test.
316	Ringsted.....	Forythe Creamery	Co-op.	H. A. Guard, Secretary	Ringsted	Ed Knudsen	Separator	Test.
317	Wallingford.....	Wallingford Creamery Co.	Stock	O. O. Anderson, Secretary	Wallingford	J. O. Jensen	Separator	Test.
Fayette County—								
318	Arlington.....	Brush Creek Farmers Creamery	Stock	Guy L. Rawson, Secretary	Arlington	W. D. Arnabarger	Separator	Test.
319	Alpha.....	Alpha Farmers Creamery Co.	Co-op.	J. F. Hathaway, Secretary	Alpha	C. N. Beach	Separator	Test.
320	Olermont.....	Clumont Valley Creamery Co.	Co-op.	J. F. Persunon, Secretary	Olermont	Amos Erickson	Separator	Test.
321	Elgin.....	Elgin Farmers Dairy Co.	Co-op.	Melch'r Luchinger, Sec	Elgin, R. 1	Ed Hanson	Grain. Or	Test.
322	Fayette.....	Fayette Creamery association	Co-op.	Peter E. Jubb, Secretary	Fayette	Frank Sherman	Separator	Test.
323	Haykaye.....	Haykaye Creamery Co.	Co-op.	J. O. Adams, Secretary	Haykaye	R. E. White	Separator	Test.
324	Maynard.....	Harlan Creamery	Co-op.	J. O. Lewis, Secretary	Maynard	C. B. Bracy	Separator	Test.
325	Minkler.....	Oran Creamery	Co-op.	J. P. Schmit, Secretary	Minkler	Geo. H. Knief	Separator	Test.
326	Minkler.....	Burr Oak Creamery	Stock	A. Paulson, Secretary	Oswan	G. M. Miller	Separator	Test.
327	Oelwein.....	Oelwein Farmers Creamery	Co-op.	E. E. Day, Secretary	Oelwein	G. W. Borland	Separator	Test.
328	Oelwein.....	Jefferson Creamery	Co-op.	J. H. Meyer, Secretary	Oelwein	A. H. Fard	Separator	Test.
329	Randall's.....	Randall's Creamery Co.	Co-op.	B. A. Cave, Secretary	Randall's	Robt. Wagner	Separator	Test.
330	Sumner.....	Center Valley Creamery Co.	Stock	A. E. Fridly, Secretary	Sumner	E. B. Olds	Separator	Test.
331	St. Lucas.....	The Farmers Co-op. Creamery	Co-op.	John J. Mihm, Sec. and Mgr	St. Lucas	R. H. Ruennen	Separator	Test.
332	Westgate.....	Westgate Creamery Co.	Co-op.	Thos. Becher, Secretary	Westgate	W. B. Johnson	Separator	Test.
333	Wadena.....	Riverside Creamery	Indiv.	F. J. Schroeder, Proprietor	Wadena	F. J. Schroeder	S. & G. O.	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of re-cooling milk.
834	West Union.....	West Union Farmers' Dairy Co.	Stock.	Geo. Swale, Secretary.	West Union.....	J. N. Gardner.....	Separator	Test.
835	Waucoma.....	Waucoma Farmers' Crm. Co.	Co-op.	J. E. Scallan, Secretary.	Waucoma.....	L. J. Gibbs.....	Separator	Test.
836	Aurora.....	Scott Creamery.....	Stock.	Palmer Hubbard Co.	Independence.....	Jas. McDonald.....	Separator	Test.
<i>Floyd County—</i>								
837	Charles City.....	Niles Creamery.....	Indiv.	J. J. Brunner, Proprietor.	Charles City, R. 1.	J. J. Brunner.....	Gath. Cr.	T & H S
838	Charles City.....	Charles City Creamery Co.	Indiv.	J. C. Daly, Proprietor.	Charles City.....	Fred Jones.....	Gath. Cr.	Test.
839	Nora Springs.....	Nora Springs Creamery Co.	Stock.	E. Pufahl, Manager.	Nora Springs.....	Ed. Pufahl.....	Gath. Cr.	Test.
840	Powersville.....	Powersville Creamery.....	Stock.	Charles Gurler & Co., Prop.	Nashua.....	W. H. Miller.....	Gath. Cr.	Oil.
841	Rockford.....	Rockford Co-op. Dairy Ass'n.	Co-op.	C. L. Putney, Manager.	Rockford.....	J. C. Larnham.....	Gath. Cr.	Oil.
842	Charles City.....	Flood Creek Creamery.....	Co-op.	E. R. Franklin, Manager.	Charles City.....	W. W. Day.....	Gath. Cr.	In. & T.
<i>Franklin County—</i>								
843	Alexander.....	Alexander Creamery.....	Indiv.	G. H. Gurler.....	DeKalb, Ill.	H. J. Kiepert.....	S. & G. C.	Test.
844	Ackley.....	Edna Creamery.....	Indiv.	Martin & Johnson Co.	Ackley.....	Chas. Strasburg.....	Separators	Test.
845	Faulkner.....	Edna Creamery (s).....	Indiv.	Martin & Johnson Co.	Ackley.....	Geo. Jorginson.....	Separator	Test.
846	Conkner.....	Hamilton Creamery Co-op. Co.	Co-op.	Geo. Dehmann, Secretary.	Hampson.....	R. E. Shookery.....	S. & G. C.	Test.
847	Chapin.....	Chapin Creamery.....	Indiv.	G. H. Gurler, Proprietor.	DeKalb, Ill.	Frank L. Larson.....	S. & G. C.	Oil test.
848	Dows.....	Farmers' Co-op. Creamery Co.	Co-op.	C. A. Nicholson, Secretary.	Dows.....	Jacob Juhl.....	Gath. Cr.	In. & all
849	Hampson.....	Hampson Creamery.....	Indiv.	A. J. Juhl, Proprietor.	Hampton.....	John F. Dawson.....	Separator	Test.
850	Iowa Falls.....	Grant Center Creamery.....	Stock.	J. J. Hensing, Secretary.	Iowa Falls, R. 1.	L. C. Cochran.....	Gath. Cr.	Test.
851	Latimer.....	Latimer Co-op. Creamery.....	Co-op.	Chris Iblings, Secretary.	Latimer.....	L. C. Cochran.....	Gath. Cr.	Test.
852	Burdette.....	Alden Creamery (s).....	Co-op.	N. J. Wheeler, Manager.	Alden.....		Gath. Cr.	Test.
<i>Greene County—</i>								
853	Grand Junction.....	Grand Junc. Co-op. Crm. Ass'n	Co-op.	L. F. Hillman, Secretary.	Grand Junction.....	Warren Adams.....	Separator	Test.
854	Paton.....	Paton Creamery.....	Indiv.	George E. White, Prop.	Paton.....	Ralph White.....	Separator	Test.
855	Scranion.....	Scranion Creamery.....	Indiv.	Lewis & Adams, Props.	Scranion.....	A. E. Adams.....	Separator	Test.
856	Coon Rapids.....	Coon Rapids Creamery (s).....	Indiv.	H. L. Felt, Proprietor.	Coon Rapid.....		Gath. Cr.	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gathered cream.	Method of receiving milk.
<i>Hancock County</i>								
395	Britt	Britt Co-op. Creamery Co.	Co-op.	John S. Fisk, Secretary	Britt	H. L. McNary ..	Separator	Test
396	Duncan	Britt Co-op. Creamery Co. (s)	Co-op.	John S. Fisk, Secretary	Britt	L. A. Nelson ..	Separator	Test
397	Crystal Lake	Crystal Lake Creamery Co.	Co-op.	Martin Larson, Secretary	Crystal Lake ..	L. A. Nelson ..	Separator	Test
398	Go-dell	Goodell Creamery Co.	Stock.	A. C. Carpenter, Secretary	Go-dell	S. & G. C. ..	S. & G. C.	Test
399	Garner	Garner Creamery	Indiv.	H. C. Schultz, Proprietor	Garner	Gath. Cr. ..	Gath. Cr.	Test
400	Concord	Concord Creamery	Co-op.	J. Kiesel, Secretary	Garner	Separator ..	Separator	Test
401	Kanawha	Kanawha Creamery Co.	Co-op.	O. T. Rikansrud, Secretary	Kanawha	Gath. Cr. ..	Gath. Cr.	T. H. S.
402	Klemme	Klemme Creamery Co.	Co-op.	Louis Sampson, Secretary	Klemme	Myron Haskin.	Separator	Test
403	Miller	Miller Creamery Co.	Stock.	P. O. Peterson, Manager	Miller	A. J. Doleschal	Separator	Test
404	Woden	Woden Creamery Co.	Indiv.	L. C. Peterson, Proprietor	Woden	S. & G. C. ..	S. & G. C.	Test
405	Madison	Forest City Co-op. Crm. Assn. (s)	Co-op.	Peter Isaacson, Secretary	Forest City ..	L. Richards ..	Separator	Test
406	Hayfield	Hayfield Creamery	Co-op.		Forest City ..		Separator	Test
<i>Hardin County</i>								
407	Alden	Alden Creamery	Co-op.	T. R. Huston, Secretary	Alden	N. H. Trimble ..	S. & G. C.	Test
408	Buckeye	Buckeye Creamery	Indiv.	A. W. Schwepps, Proprietor	St. James, Minn.	Ang. Landt ..	Separator	Test
409	Cottage	Cottage Creamery Co.	Co-op.	Carl T. Siciak, Secretary	Buckeye	G. H. Whilney & D. W. Mohlen	Separator	Test
410	Cleves	Cleves Creamery	Indiv.	Martin & Johnson Co.	Ackley	A. D. Gimer ..	Separator	Test
411	Eldora	Jensen & Krause Creamery	Indiv.	Jensen & Krause, Props.	Eldora	Jensen & Krause	Separator	Test
412	Overlea	Jensen & Krause Creamery (s)	Indiv.	Jensen & Krause, Props.	Eldora		Separator	Test
413	Hubbard	Spring Branch Co-op. Crm. Co.	Co-op.	E. K. Taylor, Secretary	Hubbard	R. Nelson ..	Separator	Test
414	H. Blvd	Hubbard Co-op. Creamery Co.	Co-op.	R. K. Taylor, Secretary	Hubbard	John Moller ..	Separator	Test
415	Lowa Falls	Lowa Falls Co-op. Creamery Co.	Co-op.	W. T. Whinery, Secretary	Lowa Falls ..	J. J. Ross ..	Separator	Test
416	New Providence	New Providence Creamery Co.	Stock.	W. T. Karsay, Secretary	New Providence	Chas. N. Hart ..	Separator	Test
417	Radcliffe	Conrad & Scott Creamery Co.	Co-op.	Oscar Sampson, Secretary	Garden City ..	H. R. Alcorn ..	Separator	Test
418	Garden City	Conrad & Scott Creamery Co. (s)	Co-op.	Oscar Sampson, Secretary	Garden City ..		Separator	Test
419	Radcliffe	Conrad & Scott Creamery Co. (s)	Co-op.	Oscar Sampson, Secretary	Garden City ..		Separator	Test
420	Robertson	Robertson Creamery	Indiv.	Martin & Johnson Co.	Ackley	Fred Flatler ..	Separator	Test
421	Steamboat Rock	Steamboat Rock Creamery Co.	Co-op.	C. L. Turner, Secretary	Steamboat Rock	W. Peterson ..	Separator	Test
422	Union	Union Creamery Co.	Co-op.	O. W. Dillon, Sec. and Mgr.	Union	L. Hall ..	Gath. Cr.	Test

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CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or Galvanizer.	Method of re-cowling milk.
455	Williamsburg	Troy Creamery Co. (s)	Co-op.	Geo. O. House, Secretary	Williamsburg	T. Winter	Separator	Test
456	York	Creamery Co.	Co-op.	H. W. Huedekohl, Secretary	Williamsburg		Separator	Test
457	North English	Yorkshire Creamery Co.	Stock.	R. N. Morrell, Secretary	Ottumwa		Separator	Test
<i>Jackson County</i>								
458	Andrew	Andrew Lily Creamery	Indiv.	H. L. Flagel, Proprietor	Andrew	H. L. Flagel	S. & G. O.	Test
459	Fulton	Fulton Co-op. Creamery	Co-op.	John Helde, Manager	Fulton	Howard Coulson	Separator	Test
460	Monmouth	Monmouth Creamery	Indiv.	James P. Younger, Prop.	Chicago, 40 Barber St.	H. H. Sargent	Separator	Test
461	Maquoketa	Fars. Union Co-op. Crm. Co.	Co-op.	Walter M. Miller, Sec.	Maquoketa	H. P. Bancroft	Separator	Test
462	Miles	Springbrook Creamery	Indiv.	John Newman, Proprietor	Elgin, Ill.	A. M. Anderson	Separator	Test
463	Otter Creek	Springbrook Creamery	Indiv.	Geo. Laible, Proprietor	Zwingle	Geo. Turner	Separator	Test
464	Preston	Springbrook Creamery	Co-op.	Samuel McNell, Secretary	Preston	John Smith	S. & G. O.	Test
465	Preston	Preston Creamery Association.	Co-op.	John Newman Co., Prop.	Elgin, Ill.	A. J. Negus	Separator	Test
466	Spragueville	Springbrook Creamery	Indiv.	John Newman Co., Prop.	Elgin, Ill.	John M. Hoffman	Separator	Test
467	Union Center	Springbrook Creamery (s)	Indiv.	John Newman Co., Prop.	Elgin, Ill.	P. J. Dupont	S. & G. O.	Test
468	Lamoite	Sterling Creamery Co.	Indiv.	N. A. Hoffman, Proprietor	Lamoite	John M. Hoffman	Separator	Test
469	St. Donatus	St. Donatus Creamery	Indiv.	Krier & Dupont, Props.	St. Donatus	P. J. Dupont	S. & G. O.	Test
470	Baldwin	Diamond Creamery	Indiv.	Andrew Nimo, Treasurer	Monticell	C. C. Clifton	Gath. Or.	Test
471	Maquoketa	Hansen's Creamery	Indiv.	E. D. Hansen, Proprietor	Maquoketa	J. C. Nemmers	S. & G. O.	Test
472	Maquoketa	Lamoite Creamery	Indiv.	John C. Nemmers, Mgr.	Lamoite			Test
473								
<i>Jasper County</i>								
474	Baxter	Baxter Dairy Co.	Co-op.	H. Krumpke, Jr., Secretary	Baxter	A. E. McClune	Separator	Test
475	Monroe	Monroe Creamery	Indiv.	M. C. Chase, Proprietor	Monroe	M. C. Chase	Separator	Test
476	Newton	Newton Creamery Co.	Co-op.	Samuel Lester, Secretary	Newton	A. B. Olson	Gath. Or.	Test
477	Newberg	Newberg Creamery Co.	Stock	G. D. Alden, Secretary	Newberg	H. E. Webb	Separator	Test
478	Grinnell	J. W. Fowler Co. (s)	Stock	J. W. Fowler	Grinnell		Separator	Test
479	Sully	Sully Creamery	Indiv.	C. C. Bomberger, Prop.	Sully	W. E. Bomberger	Gath. Or.	Oil
<i>Jefferson County</i>								
480	Fairfield	Fairfield Creamery	Co-op.	Jacob Rath, Secretary	Fairfield	G. Y. Ross	Separator	Test
481	Four Corners	Four Corners Creamery Co.	Co-op.	C. L. Schroeder, Secretary	Four Corners	C. L. Schroeder	Separator	Test
482	Salina	Salina Creamery Co.	Co-op.	For Schillerstrom, Sec.	Salina	H. S. Wood	Separator	Test
483	Glendale	Yorkshire Creamery Co. (s)	Stock.	R. N. Morrell, Sec.	Ottumwa		Separator	Test

Johnson County	Lone Tree, Orford	Jahnke Creamery	Indiv.	F. C. Jahnke, Howie & Smith	Lone Tree, Brooklyn	F. C. Jahnke, Harvey Ambler	Gath. Or. S. & G. C.	Test.
484	Jahnke Creamery	Indiv.	J. S. Condit, Proprietor	J. S. Condit, Proprietor	Anamosa	W. D. Romine	Separator	Test.
485	Oxford Creamery	Indiv.	Perry A. Stowell, Sec'y	Perry A. Stowell, Sec'y	Monticello	Ferry A. Stockwell	Separator	Test.
486	Fawn Creek Creamery	Co-op.	J. P. Younger, 40 Dearborn Street	J. P. Younger, 40 Dearborn Street	Chicago, Ill.	Wm. Gearhart	Separator	Test.
487	Clover Leaf Creamery	Indiv.	J. P. Younger, 40 Dearborn Street	J. P. Younger, 40 Dearborn Street	Chicago, Ill.	A. E. Robertson	Separator	Test.
488	Amber Creamery	Indiv.	J. P. Younger, 40 Dearborn Street	J. P. Younger, 40 Dearborn Street	Chicago, Ill.	W. H. Brownell	Separator	Test.
489	Center Junction Creamery	Indiv.	C. E. Walsion, Secretary	C. E. Walsion, Secretary	Hale	J. H. Batchelder	Separator	Test.
490	Center Junction Creamery (s)	Co-op.	Batchelder Bros.	Batchelder Bros.	Langworthy	S. F. Carrier	Separator	Test.
491	Hale Creamery Co.	Co-op.	K. Boardman, Secretary	K. Boardman, Secretary	Monticello	C. E. Lee	Separator	Test.
492	Langworthy Co-op. Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
493	Marquette Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
494	Monticello Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
495	Diamond Creamery (s)	Indiv.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
496	Diamond Creamery (s)	Indiv.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
497	Diamond Creamery (s)	Indiv.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
498	Diamond Creamery (s)	Indiv.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
499	Diamond Creamery (s)	Indiv.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
500	Diamond Creamery (s)	Indiv.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
501	Diamond Creamery (s)	Indiv.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
502	Diamond Creamery (s)	Indiv.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
503	Diamond Creamery (s)	Indiv.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
504	Diamond Creamery (s)	Indiv.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
505	Clay Valley Co-op. Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
506	Hale Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
507	Olin Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
508	Olin Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
509	Swan Creek Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
510	Swan Creek Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
511	Swan Creek Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
512	Swan Creek Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
513	Swan Creek Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
514	Swan Creek Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
515	Swan Creek Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
516	Swan Creek Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
517	Swan Creek Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
518	Swan Creek Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.
519	Swan Creek Creamery	Co-op.	Andrew Nimmo, Treasurer	Andrew Nimmo, Treasurer	Monticello		Separator	Test.

CREAMERY LIST—Continued.

Office record.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTERMAKER.	Separator or cream.	Method of receiving milk.
520	Hobart.....	Hobart Co-op. Creamery Co.	Co-op.	W. W. Annis, Secretary.	Hobart.....	H. F. Hollenbeck	Separator	Test.
521	Irvington.....	Irvington Co-op. Creamery Co.	Co-op.	S. R. Raney, Secretary.	Algona.....	L. P. A. Iversen	Separator	Test.
522	Luverne.....	Luverne Creamery Co.	Stock.	J. E. Miller, Secretary.	Luverne.....	Geo. L. Minkler.	Separator	Test.
523	Lone Rock.....	Lone Rock Co-op. Creamery Co.	Co-op.	H. J. McChesney, Secretary.	Lone Rock.....	L. C. Adams.	Separator	Test.
524	Farmers' Co-op. Crm. Ass'n	Farmers' Co-op. Crm. Ass'n	Co-op.	E. J. Skinner, Secretary.	Ledyard.....	Henry Dyer.	Separator	Test.
525	Ringsted.....	Seneca Co-op. Creamery Co.	Co-op.	M. Jensen, Secretary.	Seneca.....	August Johnson.	Separator	Test.
526	Sexton.....	Sexton Co-op. Creamery Co.	Co-op.	Chas. A. Little, Secretary.	Sexton.....	Bert O. Brownlee	Separator	Test.
527	St. Benedict.....	St. Benedict Co-op. Crm. Co.	Co-op.	Frank Van Erdewyk, Sec.	St. Benedict.....	Ed. T. Jones.	Separator	Test.
528	St. Joseph.....	St. Joseph Creamery Co.	Co-op.	Peter Epelding, Secretary.	St. Joseph.....	C. A. Nurell.	Separator	Test.
529	Swea City.....	Swea City Co-op. Creamery Co.	Co-op.	Olof Pearson, Secretary.	Swea City.....	Christ Mork.	Separator	Test.
530	Titonka.....	German Valley Co-op. Crm. Co.	Co-op.	Herman Nelson, Secretary.	Titonka.....	W. H. Haller.	Separator	Test.
531	Whittemore.....	Lotts Creek Co-op. Crm. Co.	Co-op.	Aug. roetcher, Secretary.	Lotts Creek.....	M. J. Dyer.	Separator	Test.
532	Whittemore.....	Whittemore Creamery Co.	Co-op.	Thos. Carmody, Secretary.	Whittemore.....	Edw. Walsh.	Separator	Test.
533	West Bend.....	Garfield Creamery	Co-op.	W. H. Cutshaw, Secretary.	West Bend.....	W. H. Cutshaw.	Separator	Test.
534	Wesley.....	Wesley Co-op. Crm. Co.	Co-op.	P. E. Skow, Secretary.	Wesley.....	Christ Bogh.	S. & G. C.	Test.
535	Titonka.....	Woden Creamery (s)	Indiv.	L. C. Peterson, Secretary.	Woden.....	Christ Bogh.	S. & G. C.	Test.
<i>Linn County—</i>								
536	Alburnett.....	Alburnett Creamery	Indiv.	Henderson & Sawyer, Props.	Central City.....	W. C. Dubbs.	Separator	Hund.
537	Birk Creamery.....	Birk Creamery	Indiv.	J. C. Hart, Secretary.	Anamosa.....	J. P. Minchhart.	Separator	Hund.
538	Central City.....	Central City Creamery	Indiv.	Henderson & Sawyer, Props.	Central City.....	P. W. Sawyer.	S. & G. C.	Test.
539	Ros Creamery.....	Ros Creamery	Indiv.	W. W. Ross, Prop.	Central City.....	P. W. Ross.	Separator	Hund.
540	Valley Farm Creamery	Valley Farm Creamery	Indiv.	P. G. Henderson, Prop.	Central City.....	H. Elma Wright.	S. & G. C.	Test.
541	Coggon.....	Coggon Creamery	Indiv.	J. W. McNary, Proprietor.	Coggon.....	J. J. McNary.	Separator	Test.
542	Coggon.....	North Side Creamery Co.	Co-op.	W. H. Fretz, Secretary.	Coggon.....	Fred Lehman.	Separator	Test.
543	Cedar Rapids.....	Cedar Valley Creamery.	Stock.	John Deurlinger, Prop.	Cedar Rapids.....	A. C. Bender.	Gath. Or.	Test.
544	Center Point.....	Center Point Creamery.	Indiv.	Frank J. Dolieschal, Sec.	Center Point.....	C. M. Fisher.	Separator	Test.
545	Ely & Western Creamery	Ely & Western Creamery (s)	Co-op.	Frank J. Dolieschal, Sec.	Ely.....	F. J. Adkins.	Separator	Test.
546	Western College.....	Western College Creamery	Co-op.	Frank J. Dolieschal, Sec.	Ely.....	L. E. Minchhart.	Separator	Test.
547	Prairieburg.....	Axtell Creamery	Indiv.	Minchhart & Cook	Prairieburg.....	L. E. Minchhart.	Separator	Test.
548	Rogers.....	Minchhart & Spitzer Bros	Indiv.	Minchhart & Spitzer Bros	Rogers.....	C. E. Bachelder.	Separator	Hund.
549	Springville.....	Springville Creamery	Indiv.	C. E. Bachelder	Springfield.....	J. M. Tuppe.	Separator	Test.
550	Troy Mills.....	Troy Mills Creamery Co.	Indiv.	J. M. Tupper, Prop.	Troy Mills.....	C. M. Tuppe.	Separator	Hund.
551	Highland Creamery.....	Highland Creamery	Co-op.	John Tehl, Mgr.	Walker.....	H. B. Bachelder.	Separator	Hund.
552	Wanbeck Creamery.....	Wanbeck Creamery	Indiv.	Bates & Hemmenway, Props.	Wanbeck.....	H. C. Homenway.	Separator	Hund.
553	Walker.....	Walker Creamery	Indiv.	H. J. Nietert, Proprietor.	Walker.....	S. W. Laird.	Separator	Test.

554	Viola	Viola Creamery	Indiv.	C. N. Pollock, Proprietor	Viola	C. N. Pollock	Separator	Test.
555	Prairieburg	Diamond Creamery Co. (s)	Indiv.	Andrew Nimo, Treasurer	Monticello	Gay Miller	S. & G. O.	Test.
556	Cedar Rapids	Cedar Rapids Crm. & Butter Co	Indiv.	F. W. Beyer, Manager	Cedar Rapids		Gath Or.	Test.
557	Paralia	Springville Creamery (s)	Indiv.	C. E. Hatchelder	Springville		Separator	Test.
<i>Louisa County—</i>								
558	Letts	Letts Creamery	Indiv.	J. M. Hildebrand	Letts	J. M. Hildebrand	Gath. Or.	Oil.
<i>Lucas County—</i>								
559	Russell	Russell Creamery Co.	Stock	W. J. Marshall, Proprietor	Russell	W. J. Marshall	Separator	Test.
560	Darby	Old Colony Creamery (s)	Indiv.	T. G. Hyde, Manager	Huneston		Separator	Test.
<i>Lyon County—</i>								
561	George	George Creamery	Indiv.	H. P. Jennings	George	J. G. Vogel	S. & G. O.	Test.
562	Rock Rapids	Home Lawn Creamery	Indiv.	H. E. Morroa, Proprietor	Rock Rapids	Carl Morroa	Gath. Or.	T. H. S.
563	Little Rock	Little Rock Co-op. Creamery	Co-op.	R. E. Stenzel, Secretary	Little Rock	O. W. Dnbs	S. & G. O.	Test.
564	Larchwood	Larchwood Creamery	Indiv.	M. M. Lewis, Manager	Larchwood	M. M. Lewis	S. & G. O.	Test.
565	Lester	Lester Co-op. Creamery	Co-op.	T. J. Malus, Secretary	Lester	T. J. McMalus	S. & G. O.	Hund.
<i>Mahaska County—</i>								
566	Peoria	Peoria Creamery Co.	Co-op.	W. S. Lindale, Secretary	Peoria	J. N. Smith	Separator	Test.
567	New Sharon	New Sharon Creamery Co.	Stock	W. J. Nicholson, Secretary	New Sharon	Harry E. Martin	Gath. Or.	Test.
<i>Martin County—</i>								
568	Pella	Pella Creamery	Indiv.	J. J. Bousquet, Proprietor	Pella	T. Smorenburg	Gath. Or.	In. & Oil.
569	Dallas	Waterloo Creamery Co. (s)	Stock	Burt B. Corlies, Treasurer	Des Moines		Separator	Test.
570	Pleasantville	Waterloo Creamery Co. (s)	Stock	Burt B. Corlies, Treasurer	Des Moines		Separator	Test.
<i>Marshall County—</i>								
571	Clemmons	Minerva Valley Creamery Co.	Co-op.	T. J. Stanley, Secretary	Clemmons	W. S. Cousins	Gath. Or.	Inch.
572	Dunbar	Dunbar Creamery Co.	Co-op.	O. J. Olson, Sec and Mgr.	Dunbar	Wm. Halgason	Separator	Test.
573	Laurel	Laurel Creamery	Stock	H. Cavell, Secretary	Laurel	A. F. Buchanan	Separator	Test.
574	Liscomb	Liscomb Cheese Co.	Stock	Thos. E. Culp, Secretary	Liscomb	Thos. E. Culp	Gath. Or.	Test.
575	St. Anthony	St. Anthony Creamery Co.	Co-op.	D. H. Buck, Secretary	St. Anthony	H. O. Shetler	Separator	Test.
576	State Center	State Center Far. Crm. Ass'n.	Co-op.	C. Hansen, Manager	State Center	N. E. Lorenzen	Gath. Or.	Oil.
<i>Mills County—</i>								
577	Mincola	Waterloo Creamery Co. (s)	Stock	Leroy Corlies	Council Bluffs		Separator	Test.
578	Silver City	Waterloo Creamery Co. (s)	Stock	Leroy Corlies	Council Bluffs		Separator	Test.
579	York Township	Waterloo Creamery Co. (s)	Stock	Leroy Corlies	Council Bluffs		Separator	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or Gathered cream.	Method of re-ceiving milk.
	<i>Mitchell County</i>							
580	David	David Co-op. Creamery Co.	Co-op.	Mrs. F. M. Griffin, Sec.	David	V. Fairbrother	Gath. Or.	In. & O.
581	Little Cedar	Little Cedar Creamery Co.	Co-op.	G. Hammond, Sec. and Mgr.	Little Cedar	C. Widones	Gath. Or.	Test.
582	Merona	Rock Creek Co-op. Creamery Ass'n	Co-op.	E. N. Nelson, Secretary	Merona	E. V. Oddy	Gath. Or.	Test.
583	Orchard	Farmers Co-op. Creamery Ass'n	Co-op.	J. W. Clay, Sec. and Mgr.	Orchard	Knutte Hauge	Gath. Or.	In. & Oh
584	Riceville	Riceville Co-op. Creamery Ass'n	Co-op.	F. J. Carpenter, Secretary	Riceville	A. B. Grover	Gath. Or.	Test.
585	Stacyville	Stacyville Creamery	Indiv.	J. B. Spensley, Prop.	Stacyville	J. E. Spensley	S. & G. C.	In. & O.
586	St. Ansgar	Farmers Co-op. Creamery Co.	Co-op.	J. M. Tolleson, Sec. & Mgr.	St. Ansgar	Eugene Morones	Gath. Or.	Test.
587	Toeterville	Toeterville Co-op. Creamery Co.	Co-op.	L. C. Baker, Secretary	Toeterville	A. M. Hoffman	Separator	Test.
588	New Haven	Farmers Co-op. Creamery Ass'n	Co-op.	Fred C. Sheldon, Sec. & Mgr.	New Haven	D. C. Thomas	Gath. Or.	Test.
589	Osage	Osage Co-op. Creamery	Co-op.	John Forslett, Secretary	West Mitchell	Geo. Helver	Gath. Or.	Test.
	<i>Monona County</i>							
590	Moorhead	Moorhead Creamery	Indiv.	P. D. Nelson, Proprietor.	Moorhead	P. D. Nelson	Gath. Or.	Test.
	<i>Monroe County</i>							
591	Albia	Albia Creamery	Indiv.	S. D. Thompson, Prop.	Albia	S. D. Thompson	Separator	Test.
	<i>Montgomery County</i>							
592	E. Holt	Tri-State Creamery Co.	Stock	G. W. Bull, Chicago, Mgr.	100 Washington St.	E. E. Edwards	Separator	Test.
	<i>Muscatine County</i>							
593	Wilton	Nickel Plate Creamery	Indiv.	Geo. W. Kelley, Prop.	Wilton Junction	E. G. Herring	S. & G. C.	Oil & T.
594	Atalissa	Atalissa Creamery & Produce Co.	Indiv.	L. Pilkington, Prop.	Atalissa	L. Pilkington	Gath. Or.	Oil & Oh
	<i>O'Brien County</i>							
595	Germanatown	Chaledonia Creamery	Stock	Wm. Gehrls, Manager	Germanatown	Wm. Gehrls	Separator	Test.
596	Hartley	Hartley Creamery	Indiv.	A. D. Rose com. Prop.	Hartley	A. D. Roseboom	S. & G. C.	Test.
597	Paullina	The Union Creamery Co.	Stock	Wm. Strampo, Sec. & Mgr.	Paullina	W. Strampo	Separator	Test.
598	Princhar	Princhar Creamery Co.	Co-op.	D. A. Ward, Secretary	Princhar	Henry Brunner	Hand Sep.	Test.
599	Sheldon	Sheldon Creamery	Indiv.	D. A. Miller, Prop.	Sheldon	John H. Bunker	S. & G. C.	Test.

Sac County—		Scott County—		Shelby County		Sioux County—		Story County—							
657	Early Creamery	Indiv.	C. A. Dermo, Proprietor	Early	N. H. Sharp	Separator	Test.	658	Amity Creamery	Indiv.	Wm. Koberg, Proprietor	Walcott R. 1	Wm. Koberg	Separator	Test.
658	Gold Crown Creamery	Indiv.	N. A. Wright, Proprietor	Herring	N. A. Wright	Separator	Test.	659	Star Creamery	Indiv.	J. H. Marriott, Proprietor	Long Grove	J. W. Blair	Gath. Or.	Oil.
659	Lake View Creamery	Indiv.	C. P. Irwin, Proprietor	Lake View	C. P. Irwin	Separator	Test.	660	Corley Creamery	Co-op.	C. A. Dinesen, Secretary	Corley	W. F. Pettie	S. & G. C.	Test.
660	Lake View Creamery (s)	Indiv.	C. P. Irwin, Proprietor	Lake View	C. P. Irwin	Separator	Test.	661	Earling Creamery Co.	Co-op.	Frank Thelle, Secretary	Earling	Alex. Anderson	Gath. Or.	Test.
661	Gold Medal Creamery	Indiv.	Wright & Ritter, Props.	Harlan	M. D. Taof	S. & G. C.	Test.	662	Earling Creamery Co.	Co-op.	W. M. Orecht, Secretary	Harlan	M. D. Taof	S. & G. C.	Test.
662	Dolaware Center Creamery	Co-op.	Clark N. Searle, Secretary	Harlan	M. D. Taof	S. & G. C.	Test.	663	Rock Valley Creamery	Co-op.	R. Rasmussen, Secretary	Harlan	J. Olemmensen	Separator	Test.
663	Odell Creamery	Co-op.	J. A. Cranston, Secretary	Harlan	M. D. Taof	S. & G. C.	Test.	664	Rock Valley Creamery	Co-op.	W. R. Adams, Secretary	Kirkman	Julius Anderson	Separator	Test.
664	Yarners Creamery Co.	Co-op.	Frank Wood, Secretary	Marne	P. M. Peterson, Secretary	S. & G. C.	Test.	665	Wayway Creamery Co.	Co-op.	P. M. Peterson, Secretary	Marne	Peter Peterson	S. & G. C.	Test.
665	Sac City Fair Creamery	Co-op.	Perry Rubendall, Secretary	Portsmouth	M. A. Sorenson, Secretary	S. & G. C.	Test.	666	Clay Twp. Sep. Cr. Co.	Co-op.	M. A. Sorenson, Secretary	Portsmouth	M. Ankersterne	Separator	Test.
666	Schaller Creamery	Indiv.	E. W. Geyser, Manager	Prairie Rose	J. D. Lorentzen, Proprietor	S. & G. C.	Test.	667	Portsmouth Rose Creamery	Indiv.	M. A. Sorenson, Secretary	Rudolph Wiese	Rudolph Wiese	Separator	Test.
667	Wall Lake Creamery	Indiv.	Thos. Ahern, Proprietor	Stock	Leroy Carlus, Pres. & Sec.	S. & G. C.	T. & H.	668	Waterloo Cr. Co. (s)	Stock	Leroy Carlus, Pres. & Sec.	Council Bluffs	S. & G. C.	S. & G. C.	
								669	The Alton Creamery	Indiv.	Geo. R. Mueller, Proprietor	Alton	Geo. R. Mueller	S. & G. C.	Test.
								670	Granville Creamery	Indiv.	Ben Karhoff, Proprietor	Granville	Ben Karhoff	S. & G. C.	Test.
								671	Hesper Creamery	Indiv.	Stover & Borkman	Hooper	Wm. Stover	S. & G. C.	Test.
								672	Hawarden Creamery Ass'n	Co-op.	J. M. Lynn, Secretary	Hawarden	R. J. Heiler	S. & G. C.	Test.
								673	Hull Creamery	Indiv.	Rud Stensvold, Proprietor	Hull	E. Deutberder	Gath. Or.	Test.
								674	Rock Valley Creamery	Indiv.	C. H. Day, Proprietor	Rock Valley	C. H. Day	Gath. Or.	Test.
								675	Iowa State College Creamery	State	G. L. McKay, Manager	Ames	De La Sheldon	Separator	Test.
								676	Fair Co-op. Creamery Co.	Co-op.	M. F. King, Secretary	Ames	J. F. Burrella	S. & G. C.	Test.
								677	Fair Co-op. Creamery Ass'n	Co-op.	A. J. Fawcett, Secretary	Collins	J. F. Goodnow	S. & G. C.	Test.
								678	Farmers Co-op. Creamery Ass'n	Co-op.	Henry Yeager, Secretary	Collins	E. R. Mitchell	S. & G. C.	Test.
								679	Farmers Co-op. Creamery Co.	Co-op.	C. F. Ruth, Secretary	Gilbert Station	C. P. Lake	Separator	Test.
								680	Huxley Farmers Co-op. Cr. Co.	Co-op.	A. H. Sheldahl, Secretary	Huxley	P. J. Severald	Separator	Test.
								681	Kolley Cream Co.	Indiv.	J. M. Johnston, Manager	Kelley	K. T. Nas	Separator	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or cream gathered.	Method of re-ceiving milk.
698	Maxwell	The Farmers Co-op. Crm. Co.	Co-op.	J. I. Fleming, Secretary.	Maxwell	C. H. Rusler	Separator	Test.
699	Roland	Roland Farmers Creamery Co.	Co-op.	L. T. Olson, Secretary.	Roland	S. H. Wick	Separator	Test.
700	Story City	Story City Far. Co-op. Crm. Co.	Co-op.	Alex Henderson, Secretary.	Story City	Geo. Wick	Separator	Test.
701	Slater	Slater Farmers Creamery Co.	Co-op.	Andrew Maland, Secretary.	Slater	R. A. Wick	Separator	Test.
702	Zearing	Zearing Creamery Co.	Stock	E. A. Allen, Secretary.	Zearing	R. A. Wick	Separator	Test.
703	Nevada	Nevada Creamery Co.	Indiv.	W. O. Bates	McCallaburg	W. O. Bates	Separator	Test.
704	McCallaburg	Nevada Creamery Co. (s).	Indiv.	W. O. Bates	McCallaburg	W. O. Bates	Separator	Test.
<i>Tama County—</i>								
705	Chelsea	Chelsea Creamery	Indiv.	John Newman Co.	Elgin, Ill.	J. G. Bucher	Separator	Test.
706	Elberon	Springbrook Creamery	Indiv.	John Newman Co.	Elgin, Ill.	Chas. Kuera	Separator	Test.
707	Gladbrook	Gladbrook Creamery	Indiv.	J. H. Boyd, Proprietor.	Prospectown, Min.	B. Owen	S. & G. C.	Test.
708	Tama	Tama Co-op. Creamery Co.	Co-op.	L. I. Carson, Secretary.	W. H. Graham	W. H. Graham	Gath. Or.	Test.
709	Outler	Outler Creamery	Indiv.	Armstrong & Ryan	Clutier	Ed D. Armstrong	Gath. Or.	Test.
<i>Taylor County—</i>								
710	Clearfield	Clearfield Creamery	Stock.	Joseph Doubet, Secretary	Clearfield	Geo W. McNair	Separator	Test.
711	Bedford	Bedford Creamery	Indiv.	W. A. Gethman, Secretary	Bedford	L. C. Klapp	Gath. Or.	T. & H. S.
<i>Union County—</i>								
712	Afton	Afton Creamery	Stock.	G. W. Keller, secretary	Afton	V. O. Williams	S. & G. C.	Test.
713	Ariape	Tri-State Creamery Co.	Indiv.	Cabe & McKinnon, Props.	Chicago, Ill.	Geo. Beckman	Gath. Or.	Test.
714	Creston	Tri-State Creamery Co.	Indiv.	Cabe & McKinnon, Props.	Chicago, Ill.	A. W. McCall	Gath. Or.	Test.
715	Cromwell	Tri-State Creamery Co. (s).	Indiv.	Cabe & McKinnon, Props.	Chicago, Ill.	Chas. Mostoller	Gath. Or.	Test.
716	Talmage	Talmage Creamery Co.	Stock.	W. F. Craig, Manager.	Afton	Chas. Mostoller	Gath. Or.	Test.
717	Talmage	Talmage Creamery Co. (s).	Stock.	W. F. Craig, Manager.	Afton	Chas. Mostoller	Gath. Or.	Test.
718	Talmage	Talmage Creamery Co. (s).	Stock.	W. F. Craig, Manager.	Afton	Chas. Mostoller	Gath. Or.	Test.
719	Talmage	Talmage Creamery Co. (s).	Stock.	W. F. Craig, Manager.	Afton	Chas. Mostoller	Gath. Or.	Test.
720	Lorimer	Talmage Creamery Co. (s).	Stock.	W. F. Craig, Manager.	Afton	Chas. Mostoller	Gath. Or.	Test.
<i>Van Buren County—</i>								
721	Bonaparte	Bonaparte Creamery Co.	Stock.	C. E. Stebbins, Sen. and Mgr.	Bonaparte	Thos. Merrick	Gath. Or.	Test.
722	Milton	Milton Creamery	Indiv.	V. B. Cooley, Proprietor.	Milton	Richard Quirk	Gath. Or.	Oil.

1718	Douglas	Yorkshire Creamery Co. (s)	Stock	R. N. Morrell, Secretary	Ottumwa	Separator	Test.
	Wapello County						
719	Blakesburg	Blakesburg Creamery	Indiv.	Foland Bros, Proprie ors.	Blakesburg	Separator	Test.
720	Ottumwa	Yorkshire Creamer Co.	Stock	R. N. Morrell, Secretary	Ottumwa	Separator	Test.
721	Highland	Yorkshire Creamery Co. (s)	Stock	R. N. Morrell, Secretary	Ottumwa	Separat. or	Test.
	Warren County						
722	Carlisle	Carlisle Co-op. Creamery Co.	Co-op.	C. Beauchamp, Secretary	Carlisle	Separator	Test.
723	Indianola	Warren County Creamery	Indiv.	E. Haldeman, Proprietor	Indianola	Separator	Test.
724	St. Marys	Warren County Creamery (s)	Indiv.	E. Haldeman, Proprietor	Indianola	Separator	Test.
	Washington County						
725	Kalona	Kalona Creamery	Indiv.	W. G. Brooke, Proprietor	Kalona	Gath. Cr.	In. & Ch.
726	Noble	Oak Ridge Creamery	Indiv.	J. A. Eicher, Sec. and Mgr.	Noble	Separator	Test.
727	Riverside	Riverside Creamery	Indiv.	E. Nicola & Co., Props.	Riverside	Gath. Cr.	Oil.
728	Washington	Washington Creamery	Indiv.	T. L. Emery & Sons	Washington	Separator	Test.
729	Wellman	Wellman Creamery	Stock	P. J. Gredgg, Manager	Wellman	S. & G. C.	Test.
	Wayne County						
730	Humeston	Old Colony Creamery	Indiv.	T. G. Hyde, Manager	Humeston	Separator	Test.
731	Lewisburg	Old Colony Creamery (s)	Indiv.	T. G. Hyde, Manager	Humeston	Separator	Test.
732	Cambria	Old Colony Creamery (s)	Indiv.	T. G. Hyde, Manager	Humeston	Separator	Test.
733	Corydon	Old Colony Creamery (s)	Indiv.	T. G. Hyde, Manager	Humeston	Separator	Test.
	Webster County						
734	Badger	Badger Creamery	Indiv.	Rogers & Smith, Proprietors	Humboldt	Separator	Test.
735	Clare	Clare Creamery	Indiv.	J. A. Blakeman, Proprietor	Clare	S. & G. C.	Test.
736	Duncombe	Duncombe Creamery	Indiv.	S. Smith, Proprietor	Duncombe	S. & G. C.	Test.
737	Ft. Dodge	Oakdale Dairy	Indiv.	Z. W. Thomas, Proprietor	Ft. Dodge	S. & G. C.	T. & H.
738	Industry	Oakdale Dairy (s)	Indiv.	Z. W. Thomas, Proprietor	Ft. Dodge	S. & G. C.	T. & H.
	Winnebago County						
739	Buffalo Center	Farmers Co-op. Creamery Co.	Stock	Geo. J. Andrews, Secretary	Buffalo Center	S. & G. C.	Test.
740	Forest City	Forest City Co-op. Cry. Ass'n	Co-op.	Peter Isaacson, Secretary	Forest City	Separator	Test.
741	Leland	Forest City Co-op. Cry. Ass'n (s)	Co-op.	Peter Isaacson, Secretary	Forest City	Separator	Test.
742	Mt. Valley	Forest City Co-op. Cry. Ass'n (s)	Co-op.	Peter Isaacson, Secretary	Forest City	Separator	Test.
743	Lake Mills	Lake Mills Creamery Co.	Co-op.	J. A. Horvel, Pres. and Mgr	Lake Mills	Separator	Test.
744	Dahl's Church	Lake Mills Creamery Co.	Co-op.	J. A. Horvel, Pres. and Mgr	Lake Mills	Separator	Test.
745	Newton Township	Lake Mills Creamery Co.	Co-op.	J. A. Horvel, Pres. and Mgr	Lake Mills	Separator	Test.
746	Norman	Norman Creamery Co.	Co-op.	Axel Arneson, President	Norman	Separator	Test.
747	Rake	Lincoln Co-op. Creamery	Co-op.	B. Quamme, Sec. and Mgr	Rake	Separator	Test.
748	Scarville	Scarville Creamery Ass'n	Co-op.	Isaac Larson, Pres. and Mgr	Scarville	Separator	Test.
749	Scarville	Vinje Creamery Ass'n	Co-op.	Nels Berg, Secretary	Vinje	Separator	Test.

CREAMERY LIST—CONTINUED.

Office record number.	LOCATION.	NAME OF CREAMERY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF BUTTER MAKER.	Separator or gatheted cream.	Method of re-ceiving milk.
750	Thompson	Eden Co-oper. Creamery Ass'n.	Co-op.	David Skutle, Secretary.	Amund.	Separator	Test.
751	Thompson	Thompson Co-oper. Crm. Ass'n	Co-op.	J. H. Anderson, Secretary.	Thompson.	Separator	Test.
752	Thompson	Thompson Co-oper. Crm. Ass'n	Co-op.	J. H. Anderson, Secretary.	Thompson.	Separator	Test.
753	Hollandale	Woden Creamery (s).	Indiv.	L. C. Peterson, Proprietor.	Woden.	S & G. O	Test.
754	Lake Mills	Fertile Co-oper. Dairy Ass'n (s)	Co-op.	J. T. Tallackson.	Fertile.	Separator	Test.
<i>Winneback County</i>							
755	Burr Oak	Silver Creek Creamery Co.	Co-op.	C. A. Reed, Sec. and Mgr.	Burr Oak.	Gath. Or.	Oil & Oh.
756	Calmar	Calmar Creamery	Indiv.	Boe & Nelson, Proprietors.	Calmar.	Gath. Or.	Ohurn.
757	Decorah	Ice Cave Creamery	Indiv.	Johnson & Klome, Props.	Decorah	Gath. Or.	Oil Ohn.
758	Ft. Atkinson	The Elvidge Creamery Co.	Stock.	T. R. Carpenter, Sec. & Tr.	Elkader	Gath. Or.	Oil Ohn.
759	Festina	Festina Creamery Co.	Co-op.	W. A. Schrandt, Secretary	Calmar, R. 1.	Gath. Or.	Test.
760	Highlandville	Highlandville Creamery	Indiv.	Bidne, Akre & Blorg, Props	Highlandville	Gath. Or.	Oil.
761	Highlandville	Rock Spring Creamery	Stock.	P. M. Peterson, Manager.	Spring Grove, Min	Gath. Or.	Test.
762	Hesper	Hesper Creamery	Indiv.	T. G. Meader, Proprietor.	Hesper	Gath. Or.	Test.
763	Jackson Junction.	Jackson Creamery	Stock.	A. Webster, Sec. and Treas	Wankoma	Gath. Or.	Test.
764	Kendallville	Kendallville Creamery	Indiv.	Boe, Nelson & Co., Props	Kendallville	Separator	Ohurn.
765	Nordness	Nordness Creamery	Stock.	J. N. Bragestad, Sec & Mgr	Nordness.	Gath. Or.	Oil.
766	Nordness	Red Oak Creamery	Co-op.	N. E. Hanney, Secretary.	N. O. Hippe.	S & G. O.	Oil Ohn.
767	Ossian	Silver Spring Creamery Co.	Stock.	M. J. Nicholson, Sec. & Mgr	Decorah, R. 2	Gath. Or.	Oil test.
768	Ridgeway	L. T. Fosse & Sons.	Indiv.	C. A. Fosse, Secretary.	Ridgeway	S. & G. O.	Test.
769	Ridgeway	L. T. Fosse & Sons (s)	Indiv.	C. A. Fosse, Secretary.	Ridgeway	S. & G. O.	Test.
770	Ridgeway	Lincoln Farmers Co-op Crm. Co	Co-op.	A. W. Prann, Secretary.	Ridgeway	Gath. Or.	Oil test.
771	Spilville	Spilville Creamery Ass'n.	Indiv.	M. J. Nicholson, Proprietor	Decorah, R. 2	Gath. Or.	Oil test.
<i>Woodbury County</i>							
772	Correctionville	Hopkins and Hubbard	Indiv.	Hopkins & Hubbard, Props	Holstein	Gath. Or.	Test.
773	Sioux City	Hanford-Hazelwood Cream Co.	Stock	C. H. Mann, Sec. and Mgr.	Sioux City	Gath. Or.	Test.
<i>Worth County</i>							
774	Bolan	Bolan Creamery	Indiv.	Henry White, Proprietor.	Grafton	Gath. Or.	Test.
775	Fertile	Fertile Co-oper. Dairy Co.	Co-op.	J. T. Tallackson, Secretary	Fertile	Separator	Test.
776	Joice	Nordland Creamery	Co-op.	O. A. Kittleson, Secretary	Joice	Separator	Test.
777	Kennett	Danville Co-oper. Creamery Co.	Co-op.	H. K. Myli, Sec. and Mgr.	Kennett	Separator	Test.

778	Manly.....	Farmers Co-op. Creamery Ass'n	Co-op.	E. R. Stock, Sec. and Mgr.	Manly.....	J. F. Cocktonor.	Separator	Test.
779	Melnyville.....	Lorenzen Bros. Creamery Co.	Indiv.	P. Lorenzen, Jr. Manager.	Melnyville.....	P. Lorenzen, Jr.	Gath. Cr.	O. O.
780	Northwood.....	Lorenzen Bros. & Cheese Ass'n	Co-op.	M. D. Johnson, Sec.	Northwood.....	J. H. Jones	Gath. Cr.	Test.
781	Northwood.....	Harland Dairy Association	Co-op.	A. F. Townd, Sec. and Mgr.	Silver Lake, bx 64	A. M. Hanson	Separator	Test.
782	Northwood.....	Blackfield Creamery Ass'n	Co-op.	E. A. Townd, Sec.	Northwood.....	R. S. Borgsther	S. & G. O.	Test.
783	Rural.....	Lake Mills Creamery Co. (s)	Co-op.	J. A. Howard, Pres. and Mgr.	Lake Mills.....	N. O. Dahlen	Separator	Test.
784	Northwood.....	Farmers Co-op. Cr. of Tenold	Co-op.	O. G. Anderson, Secretary	Tenold.....		Separator	Test.
785	Grafton.....	Grafton Creamery	Indiv.	Henry White	Grafton.....		Separator	Test.
Wright County								
786	Belmond.....	Norway Co-op. Creamery Co	Co-op.	C. J. Baxter, Secretary	Belmond R. 2 ..	C. H. Vanderham	Hand Sep	Test.
787	Clarion.....	Clarion Creamery Association	Co-op.	W. E. Hanley, Secretary	Clarion.....	R. W. Umbreit	Gath. Cr.	Test.
788	Goldfield.....	Fountain Creamery	Indiv.	DeWitt Goodrich Prop.	Goldfield.....	DeWitt Goodrich	S. & G. O.	Test.
789	Galt.....	Galt Creamery	Co-op.	A. K. Keshum, Secretary	Clarion.....	A. Katland	S. & G. O.	Test.
790	Palmyra.....	Palmyra Creamery	Co-op.	Herman Frohling, Secretary	Belmond.....	C. O. Way	Separator	Test.
791	Raven.....	Raven Creamery Co.	Co-op.	J. H. Dix, Secretary	Raven.....	Ben Fanelow	Separator	Test.
792	Woolstock.....	Fountain Creamery	Indiv.	Oren J. Page, Proprietor	Woolstock.....	O. J. Page	S. & G. O.	Test.

IOWA CHEESE FACTORY LIST.

Alphabetically Arranged According to Counties and Towns near which Factory is Located, Together with Information Pertaining to Each.

Office record number.	LOCATED AT OR NEAR.	NAME OF CHEESE FACTORY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF CHEESE MAKER.	Method of re-ooling of milk.
1	<i>Adams County</i> — Cumberland.....	Lincoln Center Factory.....	Indiv. ..	Henry Fleharty	Hayes	Henry Fleharty	Hundred.
2	<i>Appanoose County</i> — Monkton	Monkton Cheese Factory.....	Indiv. ..	A. Dickson	Monkton.....	A. Dickson	Hundred.
3	Ray	Ray Cheese Factory.....	Stock ..	J. E. Hiatt, Secretary	Ray	J. E. Hiatt	Hundred.
4	Hiattville	Hiatt Factory.....	Indiv. ..	W. O. Hiatt, Proprietor.....	Centerville, E. F. D. 2	W. O. Hiatt	Hundred.
5	<i>Benton County</i> — Atkins	Ideal Factory.....	Indiv. ..	A. C. Stewart, Proprietor.....	Atkins	J. W. Stewart	Hundred.
6	Newhall	Model Factory.....	Indiv. ..	C. B. Chenoweth, Proprietor.....	Newhall.....	Wm. Johnson	Hundred.
7	<i>Black Hawk County</i> — Waterloo	The Fowler Co	Stock ..	The Fowler Co.	Waterloo.....	F. E. Wightman	Test.
8	Waterloo	North Star Cheese Factory.....	Stock ..	The Fowler Co.	Waterloo.....	John St. John	Test.
9	<i>Bremner County</i> — Janesville.....	The Fowler Co	Stock ..	The Fowler Co.	Waterloo.....	John McMurray.....	Test.
10	<i>Cerro Gordo County</i> — Burchinal	Burchinal Cheese Factory.....	Indiv. ..	T. R. Coates, Proprietor.....	Burchinal.....	T. R. Coates	Test.
11	Mason City	Lincoln Dairy Co	Co-op. ..	Jno. W. Smith, Sec. & Treas.	Mason City, E. F. D. 1	J. C. Schafer	Test.

IOWA CHEESE FACTORY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CHEESE FACTORY.	How operated.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	NAME OF CHEESE MAKER.	Method of testing milk.
	<i>Kossuth County</i> —						
27	Ln Verne.....	Pioneer Cheese Factory.....	Stock...	S. B. Hatty, Secretary	Benwick.....	.....	Test.
	<i>Lee County</i> —						
28	Franklin Station...	Franklin Station Cheese Co.....	Stock...	H. G. Ort, President	Donnellson, R. F. D. No. 1.....	Austin Sassan....	Hundred.
	<i>Monroe County</i> —						
29	Albia.....	Bone Cheese Factory.....	Indiv....	S. G. Bone, Proprietor	Albia.....	Merle Bone.....	Hundred.
30	Albia.....	Hinton Cheese Factory.....	Indiv....	Sam Hinton.....	Albia.....	Sam Hinton.....	Hundred.
	<i>Marshall County</i> —						
31	Liscomb.....	Liscomb Cheese Co.....	Stock...	Thos. E. Culp, Manager	Liscomb.....	J. D. Mills.....	Test.
	<i>Muscatine County</i> —						
32	Wilton Junction..	Muscatine French Cheese Co.....	Co-op...	Fritz Kolb, Secretary.	Wilton Junction, Box 88.....	Carl Las.....	Hundred.
	<i>Poweshick County</i> —						
33	Grinnell.....	Bartell Cheese Factory.....	Indiv....	J. W. Fowler, Manager	Grinnell.....	.....	Test.
34	Jacobs.....	Jacob Switch Cheese Factory.....	Indiv....	A. C. Payne, Proprietor	Jacobs.....	L. A. Wilson.....	Test.
	<i>Scott County</i> —						
35	Princeton.....	Waspate Cheese Factory.....	Stock...	L. W. Pope & Son.....	Princeton.....	Chas. A. Pope....	Test.
	<i>Story County</i> —						
36	Iowa Center.....	Iowa Center Cheese Factory.....	Indiv....	J. O. Moore.....	Iowa Center.....	W. H. Moore.....	Test.
37	Ames.....	I. A. C. Cheese Factory.....	State...	G. L. McKay, Manager.	Ames.....	.....	Test.

Taylor County—							
38	Sharpsburg	Sharpsburg Cheese Co.	Indiv.	G. S. Eastlack, Manager	Sharpsburg	G. S. Eastlack	Hundred.
39	Blockton	Blockton Cheese Factory	Indiv.	Waldrup & Bonafeld	Blockton	Waldrup & Bonafeld	Hundred.
Washington County—							
40	Westchester	The Leet Cheese Factory	Indiv.	W. E. Leet, Proprietor	Westchester	W. E. Leet	Hundred.
41	Clay	Clay Cheese Factory	Stock	O. Meschman, Secretary	Richland, R. T. D. 2.	O. W. Hake	Test.
Wayne County—							
42	Promise City	Promise City Cheese Factory	Co-op.	C. R. Noble	Promise City	C. R. Noble	Hundred.
43	Sewall	Sewall Cheese Manufacturing Co.	Stock	Ira Banta	Sewall	Samuel Sander	Hundred.
44	Lineville	Lineville Cheese Factory	Indiv.	Mathew DeHaan	Lineville	Mathew DeHaan	Hundred.
45	Seymour	Seymour Cheese Co.	Stock	K. A. Weagley, Secretary	Seymour	R. E. Spencer	Hundred.

RAILWAY BUTTER SHIPMENTS.

The tables of railway butter shipments represent the shipments of butter to points outside the state, and are for the year ending September 30, 1903. Creamery butter statistics printed in this report are for the year ending July 1, 1903. The creamery butter figures are partly estimated from the reports of creameries so far as received. The railway butter shipments are reports direct from the railroads of the state. The latter reports are, therefore, considered very accurate, and the former somewhat subject to inaccuracy. Particularly this year, the creamery butter figures are low on account of the closing of so large a number of creameries, which materially affects the estimate of the total product for the state.

Not all the butter here reported is made in Iowa. It is true that we do not import butter for consumption, but considerable quantities of low grade butter are annually imported to be made into renovated butter or resold outside the state. Sioux City, in Woodbury county, has a large renovated butter factory and is also a center for the collection of packing stock and renovated butter stock. Naturally, a large part of this butter comes from South Dakota and Nebraska. These facts and the fact that Sioux City also has the largest creamery in the state, account for the great increase in the total butter shipped from Woodbury county. A like thing is true in regard to Polk county, which has three renovated butter factories and two large creameries, located in the city of Des Moines. Clayton and Dickinson counties, showing large gains in butter shipments, each have renovated butter factories. The stock from which renovated butter is made comes largely from outside the state, and so the total shipments from these counties do not represent at all the amount of butter made in the counties.

The shipping of cream to the larger plants is accountable for some of the changes in county totals. It therefore happens that the figures in scarcely a single case represent even approximately the amount of butter produced in a county and shipped from it.

This department is under great obligations to the railways of the state that have made reports of butter shipments at considerable expense of time and effort.

TABLE SHOWING NUMBER OF CREAMERIES—GROSS POUNDS OF BUTTER SHIPPED OUT OF STATE.

COUNTIES.	NUMBER OF CREAMERIES FOR 1902 AND 1903.		GROSS POUNDS OF BUTTER SHIPPED OUT OF THE STATE FOR THE YEARS ENDING SEPTEMBER 30, 1902 AND 1903, SHOWING INCREASE AND DECREASE BY COUNTIES.			
	1902	1903	1902	1903	Increase.	Decrease.
THE STATE.....	919	661	*85,864,721	91,761,661	18,912,417	8,005,477
Adair.....	18	18	846,409	592,912		253,497
Adams.....	6	8	444,481	171,648		272,788
Allamakee.....	7	7	1,304,818	1,489,747	184,929	
Appanoose.....			70,787	118,867	42,680	
Audubon.....	11	11	1,060,121	990,537		99,584
Benton.....	18	10	600,097	797,321	197,224	
Black Hawk.....	20	17	1,847,781	1,494,874		352,907
Boone.....	7	4	108,517	71,617		31,900
Bremer.....	22	21	2,878,128	2,408,880		469,248
Buchanan.....	18	17	8,191,442	2,442,670		748,772
Buena Vista.....	10	7	1,026,794	1,094,595	67,801	
Butler.....	21	20	2,818,288	1,827,671		1,000,617
Calhoun.....	10	8	1,417,867	1,574,960	157,093	
Carroll.....	18	12	1,198,172	1,520,613	322,441	
Cass.....	10	7	870,228	226,102		644,126
Cedar.....	9	9	443,197	418,508		24,689
Cerro Gordo.....	6	7	788,244	645,449		142,795
Cherokee.....	7	4	123,246	171,468	48,217	
Chickasaw.....	19	18	2,715,724	2,619,271		96,453
Clarke.....	4		17,040	18,755	1,755	
Clay.....	18	8	665,872	614,818		51,054
Clayton.....	20	18	2,980,896	3,916,064	935,708	
Clinton.....	17	15	1,180,200	680,676		499,524
Crawford.....	5	8	1,079,005	964,798		114,207
Dallas.....	10	8	877,279	781,682		96,597
Davis.....	5	4	188,615	47,187		141,428
Decatur.....	4	5	22,787	125,640	102,853	
Delaware.....	25	26	2,672,248	2,967,206	294,958	
Des Moines.....			266,928	801,670	5,744	
Dickinson.....	5	4	641,590	1,201,561	559,961	
Dubuque.....	20	28	2,822,444	2,738,755	416,811	
Emmet.....	11	8	778,618	854,436	80,818	
Fayette.....	20	19	2,448,793	2,494,658	45,865	
Floyd.....	7	6	969,606	924,558		45,048
Franklin.....	12	10	584,164	373,920		210,244
Fremont.....	1		3,482	3,968	486	
Greene.....	6	4	284,818	230,652		54,166
Grundy.....	14	10	675,555	708,698	33,143	
Guthrie.....	17	15	1,218,177	1,180,018		38,159
Hamilton.....	11	18	1,170,680	1,654,562	483,882	
Hancock.....	12	12	548,176	461,156		87,020
Hardin.....	17	16	1,885,521	1,689,760		195,761
Harrison.....	5	2	411,888	840,375		428,487
Henry.....	8	1	71,598	84,423	12,825	
Howard.....	10	9	1,483,462	1,860,880		377,418
Humboldt.....	12	11	888,965	794,480		94,485
Ia.....	8	2	807,980	214,280		593,700
Iowa.....	12	10	616,428	698,889	70,461	
Jackson.....	20	16	1,141,627	1,408,308	266,681	
Jasper.....	8	6	255,717	297,890	41,643	

TABLE SHOWING NUMBER OF CREAMERIES—GROSS POUNDS OF BUTTER SHIPPED OUT OF STATE—CONTINUED.

COUNTIES.	NUMBER OF CREAMERIES FOR 1902 AND 1903.		GROSS POUNDS OF BUTTER SHIPPED OUT OF THE STATE FOR THE YEARS ENDING SEPTEMBER 30, 1902, AND 1903, SHOWING INCREASE AND DECREASE BY COUNTIES.			
	1902	1903	1902	1903	Increase.	Decrease.
Jefferson.....	5	4	97,937	110,752	12,815	
Johnson.....	3	2	211,461	124,708		86,753
Jones.....	30	25	4,034,175	3,923,068		103,112
Keokuk.....	7	8	292,992	433,281	145,289	
Kossuth.....	22	22	1,955,559	1,732,170		173,389
Lee.....			816,298	234,006		582,292
Linn.....	25	23	1,192,201	1,607,433	315,232	
Louisia.....	2	1	63,910	51,449		12,461
Lucas.....	2	2				
Lyon.....	6	5	373,134	234,374		138,810
Madison.....			11,435	25,698	14,263	
Mahaska.....	2	2	99,819	692,593	593,244	
Marion.....	2	3	72,861	67,550		5,311
Marshall.....	3	6	605,221	536,492		73,729
Mills.....	4	3	6,310	14,961	8,651	
Mitchell.....	11	10	1,334,068	1,577,956		303,107
Monona.....		1	44,397	60,795	15,938	
Monroe.....	1	1	41,715	33,697		16,062
Montgomery.....	4	1	115,797	149,658	33,861	
Muscatine.....	3	2	33,619	123,113	84,499	
O'Brien.....	5	5	626,465	673,065	51,600	
Osceola.....	5	3	231,160	305,199	74,039	
Page.....	4	3	672,674	2,103,922	1,431,248	
Palo Alto.....	20	15	1,668,391	1,524,245		144,146
Plymouth.....	10	6	555,340	464,930		90,390
Pocahontas.....	12	3	302,024	644,998		157,023
Polk.....	4	5	2,073,365	3,224,270	1,150,905	
Pottawattamie.....	7	3	534,390	324,394		209,406
Poweshiek.....	6	7	403,335	407,313	1,433	
Ringgold.....	2	2	20,516	12,307		8,209
Sac.....	13	11	349,046	699,777		149,239
Scott.....	3	2	253,700	323,631	69,131	
Shelby.....	12	10	709,450	231,351		478,099
Sioux.....	7	6	614,462	944,706	330,244	
Story.....	14	14	1,355,433	1,333,203	32,754	
Tama.....	9	5	671,110	545,905		125,205
Taylor.....	4	2	200,203	513,093	312,890	
Union.....	14	9	695,700	633,011		57,689
Van Buren.....	5	3	36,350	93,313	56,963	
Wapello.....	1	3	177,359	137,107		40,252
Warren.....	5	3	13,400			13,400
Washington.....	5	5	276,575	403,123	126,551	
Wayne.....	4	4	633,733	794,455	160,703	
Webster.....	7	5	493,333	669,325	175,943	
Winnebago.....	15	16	1,293,302	1,105,416		187,886
Winneeshiek.....	15	17	1,503,563	2,153,993	650,430	
Woodbury.....	3	3	33,994,637	7,330,139	3,325,512	
Worth.....	12	12	933,233	361,033		572,200
Wright.....	3	7	723,671	791,213	68,542	
THE STATE.....	919	661	35,354,731	91,761,661	13,912,417	3,005,677

Net increase, gross pounds, 5,906,940.

* Error in statements from Woodbury county last year reduce the figures from that county and from the state by 210,261 pounds. The figures here given are correct.

TABLE SHOWING TOTAL NET BUTTER SHIPMENTS OF THE STATE FOR THE YEARS 1890 TO 1903, INCLUSIVE, FROM IOWA TO POINTS OUTSIDE THE STATE; ALSO INCREASE OR DECREASE AS COMPARED WITH THE YEAR PRECEDING.

Years Ending October 1.	Net pounds of butter shipped.	Increase over preceding year.	Decrease from preceding year.
1890	71,255,796		
1891	68,690,716		2,565,080
1892	60,112,931		8,577,785
1893	54,572,902		5,540,029
1894	54,509,417		63,485
1895	66,497,108	11,987,691	
1896	80,032,916	13,535,808	
1897	83,620,081	3,587,165	
1898	77,364,337		6,255,744
1899	76,620,326		744,011
1900	71,719,329		4,910,997
1901	74,863,965	3,144,636	
1902	72,714,584		2,149,411
1903	77,079,794	4,365,210	

Counties shipping more than 1,000,000 pounds, net, of butter in the year ending September 30, 1903:

1903.	Counties.	1902.
6,148,916	Woodbury	3,885,487
3,297,892	Jones	3,888,707
2,889,518	Clayton	2,508,534
2,708,896	Polk	1,741,626
2,492,453	Dalaware	2,224,684
2,300,551	Dubuque	1,950,853
2,200,187	Chickasaw	2,231,208
2,085,508	Fayette	2,036,986
1,811,873	Winnebago	1,267,195
1,767,294	Page	541,286
1,535,243	Butler	1,947,337
1,497,022	Kossuth	1,642,639
1,389,848	Hamilton	9,833
1,368,998	Hardin	1,541,837
1,325,433	Mitchell	1,582,612
1,322,953	Calhoun	1,190,539
1,297,879	Bremer	2,417,627
1,280,365	Palo Alto	1,401,448
1,277,814	Carroll	1,008,295
1,266,285	Linn	1,005,048
1,255,694	Black Hawk	1,552,136
1,251,842	Buchanan	2,680,811
1,251,837	Alamakee	1,096,047
1,182,974	Jackson	953,985
1,142,702	Howard	1,201,069
1,106,093	Story	1,188,580
1,009,302	Dickinson	553,985
49,583,470	Totals	44,223,893

These twenty-seven counties ship 64 per cent of the 77,079,794 net pounds of butter shipped from the state.

NET BUTTER SHIPMENTS BY COUNTIES AND RANK—AREA OF COUNTIES.

Showing pounds of butter shipped per square mile and rank of counties; also total net butter shipments for the state and net pounds per square mile, for the year ending September 30, 1903.

Counties.	Total net shipments of butter for the year.	Rank by total lbs. shipped.	Area of square miles in counties.	Pounds per square mile.	Rank by lbs. per square mile.
THE STATE.....	77,079,794	.....	56,026	.....	.....
Adair.....	498,046	58	576	864	80
Adams.....	144,180	74	432	336	72
Allamakee.....	1,251,887	28	658	1,901	24
Appanoose.....	95,228	88	516	184	63
Audubon.....	882,051	31	443	1,878	25
Benton.....	699,743	37	720	980	48
Black Hawk.....	1,255,694	21	576	2,180	23
Boone.....	57,578	87	576	99	89
Bremer.....	1,297,379	17	432	3,008	8
Buchanan.....	1,251,842	22	576	2,173	23
Buena Vista.....	919,459	30	576	1,596	31
Butler.....	1,585,243	11	576	2,655	11
Calhoun.....	1,822,958	16	576	2,246	18
Carroll.....	1,277,814	19	576	2,217	20
Cass.....	189,925	76	576	329	74
Cedar.....	351,546	60	576	610	60
Cerro Gordo.....	542,177	49	576	941	46
Cherokee.....	143,948	77	576	249	79
Chickasaw.....	2,200,187	7	504	4,365	4
Clarke.....	15,754	94	432	36	94
Clay.....	516,027	53	576	895	49
Clayton.....	2,889,518	8	728	3,969	5
Clinton.....	554,997	47	608	732	52
Crawford.....	805,370	32	720	1,118	39
Dallas.....	614,612	41	588	1,045	40
Davis.....	89,911	92	508	79	92
Decatur.....	105,587	80	584	197	82
Delaware.....	2,492,453	5	576	427	67
Des Moines.....	253,402	68	413	613	86
Dickinson.....	1,006,302	27	406	2,492	13
Dubuque.....	2,800,554	6	601	3,827	6
Emmet.....	741,726	36	404	1,835	36
Fayette.....	2,005,508	8	720	2,910	9
Floyd.....	776,628	34	504	1,540	32
Franklin.....	313,252	68	576	542	64
Fremont.....	3,249	97	509	6	97
Greene.....	198,747	78	576	336	71
Grundy.....	591,106	42	504	1,172	37
Guthrie.....	991,215	28	593	1,671	30
Hamilton.....	1,898,848	13	576	2,412	14
Hancock.....	887,871	56	576	672	55
Hardin.....	1,893,968	14	576	2,376	16
Harrison.....	285,915	64	606	468	65
Henry.....	70,915	86	432	168	86
Howard.....	1,143,702	25	476	2,400	15

NET BUTTER SHIPMENTS BY COUNTIES AND RANK—AREA OF COUNTIES—Con.

Counties.	Total net ship- ments of but- ter for the year.	Rank by total lbs. shipped.	Area of square miles in counties.	Pounds per square mile.	Rank by lbs. per square mile.
Humboldt.....	657,368	40	482	1,521	84
Ide.....	180,008	75	488	415	68
Iowa.....	582,446	44	584	997	44
Jackson.....	1,182,974	24	688	1,854	28
Jasper.....	249,782	69	780	342	70
Jefferson.....	96,061	84	482	215	81
Johnson.....	104,758	81	618	169	84
Jones.....	3,297,692	2	576	5,725	2
Keokuk.....	368,156	59	576	639	57
Kossuth.....	1,497,022	12	977	1,532	38
Lee.....	196,565	71	512	383	69
Linn.....	1,296,285	20	720	1,788	29
Louis.....	43,217	91	407	106	98
Lucas.....	.....	98	482	.....	96
Lyon.....	196,874	70	587	335	78
Madison.....	21,595	96	576	37	98
Mahaska.....	531,752	45	576	1,009	45
Marion.....	55,743	88	576	98	90
Marshall.....	442,258	55	576	767	54
Mills.....	12,367	95	444	27	95
Mitchell.....	1,825,488	15	478	2,802	10
Monona.....	51,087	89	556	96	91
Monroe.....	49,280	90	433	114	87
Montgomery.....	125,712	78	482	261	76
Muscatine.....	103,419	82	437	236	80
O'Brien.....	599,574	46	576	998	45
Osceola.....	253,341	64	400	640	56
Page.....	1,707,284	10	587	3,172	7
Palo Alto.....	1,280,365	18	576	2,222	19
Plymouth.....	890,558	37	890	454	66
Pocahontas.....	541,798	50	576	940	47
Polk.....	2,708,386	4	535	4,629	3
Pottawattamie.....	272,864	66	960	284	77
Poweshiek.....	342,507	61	553	598	63
Ringold.....	10,337	96	542	19	96
Sac.....	587,812	48	576	1,020	43
Scott.....	274,583	65	455	608	61
Shelby.....	194,834	72	590	829	75
Sioux.....	793,753	33	769	1,032	41
Story.....	1,166,098	26	576	2,024	21
Tama.....	458,590	54	720	636	53
Taylor.....	435,200	56	548	794	51
Union.....	586,929	51	482	1,240	36
Van Buren.....	81,222	86	434	167	85
Wapello.....	115,169	79	482	266	78
Warren.....	.....	99	599	.....	99
Washington.....	388,625	62	566	598	62
Wayne.....	697,842	38	523	1,274	35
Wabster.....	563,588	49	720	769	65
Winnebago.....	923,549	29	408	2,304	17
Winneblesh.....	1,811,873	9	604	2,810	12
Woodbury.....	6,148,916	1	873	7,048	1
Worth.....	748,270	35	408	1,848	27
Wright.....	664,621	39	576	1,153	38
THE STATE.....	77,079,794		59,025		

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